M. A. Akşit Koleksiyonundan

Amaç

10

Süt açısından, Faydanın Uygulanabilir Boyuta Getirilmesi, Biyolojik Kullanılabilir ve Faydalanma Değeri*

*M. Arif AKŞİT***

***Yediklerimizden ne kadar faydalanıyoruz sorusuna yapılan konuşmadan alınmıştır.**
****Tıp Doktoru, Çocuk Sağlığı ve Hastalıkları Uzmanı, Neonatoloji ve Pediatrik Genetik Uzmanı, (Emekli) Eskişehir Osmangazi Üniversitesi Tıp Fakültesi***

Besinlerin alınması değil, öncelikle sindirilmesi, metabolize edilmesi, yararlı boyuta getirilmedi gerekir. Bir yenilen yiyecekte yüksek miktarda bulunabilir, ıspanakta demir de olduğu gibi, ama sindirim işlemi olmuyorsa, bir anlamı da olamaz.

Yiyeceklerin sadece besin olarak ele alınmamalı, bir ruhsal, sosyal bir doyum anlamındadır. Ayrıca emzirmenin bebeklerin ilk etik ilkeyi, sınırlamayı öğretmesi, kendi kontrolünü fark etmesi olarak da ele alınabilir.

Emzirme boyutu oluşan boyutta, Endojen salınan hormonlar: endorfin, seratonin, oksitosin ve dopamin gibi faktörlerin etkileşimi de belirgindir. Bunlara mutluluk hormonları denilebilir.

Ayrıca eğer bir bireyde laktoz entoleransı var ise, içtiği süt su çekerek, ishale neden olacaktır. Gluten enteropatisi yanında, inek sütü alerjileri ve diğer sorunlarda akla gelmelidir.

Sağlıklı olmanın temeli beslenme, sağlıksız olmanın boyutu da yine beslenme olarak ele alınabilir.

İshali olan kişinin beslenmesinin anlamı, damardan değil, oral Rehidrasyon yapılmasıdır. Gerek kolera veya benzeri durumlarda bile yaşam oranını belirgin arttırdığı açıktır.

Özet olarak, öncelikle sindirebildiğin gıdayı yemelisin denilmez, istediğin, beğendiğin, buna karşılık, sana faydalı olan gıdaları tüketmen önerilir denilmelidir.

Özet

Süt açısından, Faydanın Uygulanabilir Boyuta Getirilmesi, Biyolojik Kullanılabilir ve Faydalanma Değeri

Amaç: Besinler alınması ötesinde, sindirilmesi, metabolize edilmesi ve ayrıca, metabolitlerinin dışarı atılması ile bağırsakta posa bırakması istenir. Tümünü bir besin ile sağlamak ancak emzirme sayesinde

olabilirken, diğerleri için yeterli ve dengeli olmasına çalışmak gerekir. Bu makalede biyolojik değeri ile biyo-yararlanım boyutu irdelenmektedir.
Dayanaklar/Kaynaklar: Wikipedia temelinde internet taraması yapılmıştır, ayrıca Yazarın tecrübesi de eklenmektedir.
Genel Yaklaşım; Her canlının kendi annesinin sütü varlığı ve yaşamı temelinde önemlidir. Bu açıdan emzirme, kısaca anne sütü insanlar için önemi belirgindir. Hayvanlarda kolostrum almayan yavrunun yaşaması çok zordur. Diğer sütlerin de anne sütüne uyarlanması ve buna göre biyolojik değerliliği oluşturulmalıdır.
Sonuç: Beslenme, özellikle yenidoğan döneminde besini vermenin çok üstünde olduğu belirgindir. Tat ve mutluluk boyutunu emzirme dışındakilerin sağlaması beklenmemektedir.
Yorum: Süt ötesinde de genel besinler, yararlanma ve değerlenmesi dikkate alınarak irdelenmiştir. Değerlenme, tek düze; olumlu, olumsuz değil, integral ve üçlü boyut alanları ile de ele alıp, izlem ile zamanın dördüncü boyutu olarak, sonuca bakarak ele alınmalıdır. Anne sütünün biyolojik değeri %95 olması, %5 boyutunun dışkılama açısından öne çıkmaktadır. Bu açıdan besin boyutunda posa da öne çıkmaktadır.
Anahtar Kelimeler: Anne sütü, inek sütü, süt adapte edilmesi, biyolojik değer ve kullanımı

Outline
From perspective of milk, the benefit must be at functional form, biological availability, and the efficacy of the assistance.

AIM: Foods in conclusion of taken, digestion, metabolism and being useful, and be discharging the metabolic wastage, also being formation of stool to pass out. All can be ensued by breastfeeding, for others combination and sufficient and effective in balancing the nutrition. This Article on the biologic value and bioavailability as in evaluation concept.
Grounding: From internet search and Wikipedia, also Author's decisions included.
Introduction: Each mammalian must take their mother's milk. Therefore, breastfeeding is exclusively important. In animals if the infant cannot take colostrum, hard to survive. Therefore, other milks must adapt to Human milk consideration.
Notions: Nutrition is more than feeding, especially at Neonatology period, breastfeeding performing happiness and tasteful, and more than food.
Conclusion: Including the milk concept, the nutritional in general, biological value, availability, are in consideration. Evaluation of nutrition, not only one way, integral and three-dimensional area is in connection, thus by time aspect, fourth value is at following the infant. The mother's milk as 95% at value testing, thus the stool formation, and also in consideration of other factors, and defecation at normal way.
Key Words: Mother's Milk, cow's milk, adaptation of milk, Biologic value, and availability

Giriş

Besinler için özet tanım, yeterli ve dengeli olmasıdır. Buna eklenen parametre ise sevdiğin, arzu ettiğin yiyeceği yemeli denilmelidir.

Bebeklerde, bunu gözlemek zor değildir. Öncelikle alımına, istekli, isteksiz olmasına bakılmalı, midede birikim, kolay boşalması, sindirilmesi, gaz yapmaması, intestinal sindirim boyutu ve kalın bağırsak boyutu, kısaca tüm özet, dışkıya bakmak ile anlaşılır. Her yenidoğan, özellikle prematürenin dışkılaması, beslenme irdelenmesi açısından, mutlaka dikkatlice incelenmelidir.

Beslenmede bir önemli boyut, bireyin talep etmesi, beğenmesi ve arzu etmesi ile olmaktadır. Zorlamanın hiçbir boyutu kabul edilemez. Anne sütünü alırken, bebeğin istemediği durumlar

ile karşılaşılmış, bazılarında Galaktozemi saptanmıştır. Ayrıca emzirmede annenin istediği ve rızası da olmalıdır. Bebeğini sevmeyen anne nadir olsa da dikkatlice değerlendirilmelidir.

Bilimsel olarak her bireyi ilgilendirdiği için, çeşitli bilgileri kendilerine göre yorumlamaktadırlar. Ancak, temel kavramlar; a) Gıda Mühendisleri, b) Diyetisyenler ve c) Çeşitli Tıbbi Bilim Dalları, Çocuk Hekimliği başta olmak üzere, uzmanlık alanlarıdır. Doğru ancak kitap ve araştırmada değil, uygulamada, damak tadında ve algılamaktadır. Bu açıdan bireye sorulmalı, prematüre bile olsa, bireyin beğenisi temel yanıt veren olmalıdır. Rıza şartı gereklidir, ***insanların gönüllerinin yolu mideden geçer*** bir gerçeklik payı olan sözdür.

Ekonomik Açıdan Bakış

Sahip olduğunuz ötesinde, size yararlı olan, etkin, verimli ve elinizde olan faydalı olacaktır. Kalori açısından en önemli olan yağ (9kal/g) iken alkol (7kal/g) olsa da alkolün yanması için enerjiye gereksinim vardır ve kısaca her hücrede enerji vermeden önce eksiklik yaratır ve toksik boyut oluşturmaktadır.

Aynı şekilde proteinin gereksinim için tam sayıda aminoasitlere sahip olmalı, yenidoğanlarda 12-20 aminoasit gereksinimi esansiyel iken erişkinlerde 2-4 adet olması dikkate alınınca, besin değeri yüksek olan gıda alınması şarttır. Yapım için enerjiye de gereksinim olmakta, anne sütü bu açıdan daha kalorisi yüksektir. Protein enerji çeker ve net verdiği kalori 4kal/g olmaktadır.

Ekonomi Bilimi açısından 4 boyut ele alınmalıdır.

1) **Etkinlik:** Örnek olarak, D vitamini ele alınca, güneş ışığı ile bir el kadar cilt güneş, UV alması ile D vitamin olması beklenir. Bu yapılan, Karaciğer ve daha sonra Böbreğe gitmesi ile aktif şekle dönüşür. Bu açıdan sadece vitamin almak ile hemen etkinlik beklenmez, ancak metabolik işlevlerin tamamlanması gerekir. Bu açıdan D3 önerilmektedir.
2) **Verimlilik:** D vitamini bağırsaktan kalsiyum emilimi yapmaktadır, önce epitel de Ca toplanır, sonra emilmektedir. Kalsiyum Karbonat en fazla kalsiyum kapsamasına karşın, emilmesi zordur, bu açıdan laktat tuzu önemli, damardan ise glukonat formu verilir. Önemli olan verilmesi değil, emilebilmesi, verimli olmasıdır. 600mg Ca elde etmek için 1500mg Ca karbonat olmaktadır.
3) **Bulunabilirlik:** Kalsiyum açısından hastanelerde laktat kullanılırken, piyasada olanlar karma preparatlardır. Ayrıca Ca, P ile dengeli alınmalıdır. 5g (1 adet çay kaşığında), 600mg Ca glukonat, 200mg Ca laktat, 200mg Ca fosfat, 400IU Vitamin D (Kolekalsiferol, D3) kapsar. Birçok etkileşim ile bulunur. Flor (F), düşük sular söz konusu ise gündeme gelmelidir. Tek değerli, Na, K, Çift değerli Ca, Mg, ayrıca Zn, P, hücre içi ve dışı olarak öne alınmalıdır.
4) **Kalite ile memnuniyet boyutu**: alınmalıdır. Ca laktat alınması, çok zordur, çocuklar istememektedir. Bu açıdan Fosfo-kalsiyum ilacı içine, muz esansı ile pudra şekeri konulmaktadır. Bazı eklenenlerin gıda katkısı ve bilimsel olması ile dikkate alınmalı, örneğin içerik pH öncelikli olmaktadır. Efervesan olarak (suda çözülen tablet) sunulanlarda, emilimi arttırmak için oluşturulmaktadır.

   Anne sütünde, daha doğru olarak emzirmede, cilt, cilde temas ve sıcaklık gibi çeşitli faktörler önemli olmaktadır. Mutluluk hormonlarının salınması ötesinde, kucağa alınarak beslenen ile yatakta biberon ile besleyen çocuklarda besinden yararlanma boyutu belirgindir. Aynı şekilde, diktatörlük olan evde, çocuklar güdük kalmakta, boy alamamaktadırlar.

   Emzirmedeki süt bir bakıma canlıdır, içinde enzim, kök hücreler ve birçok lenfosit dahil, birçok oluşumlar vardır. Bu açıdan bazı faktörler, besini rakipsiz, ideal sıfata getirmektedir.

Sevilen kadar, emzirmede olduğu gibi, annenin arzu etmesi ve rıza göstermelidir, zorlama olamaz. Birçok besin, örneğin çiğ balık (suşi) ve salyangoz bazı ailelerde yenilmediği için çocuklara da verilemez. Aynı zamanda anne suşi yediğinde, bebeğin kakasından da bu koku çıkabilir ve sorun yaratabilir. Kısaca annenin yediği doğrudan bebeği de etkileyeceği düşünülmelidir.

Bunların içinde ucuzluk olmaması, kullanılabilir olmaması açısından, bozulma ve dayanıksızlık gibi faktörler öne çıkmaktadır. Eski 1970 arabaların HP gücü 54 iken, 35Litre/100Km benzin yakıyorken, şimdi 160 HP olup, mazot ile 4,8Litre/100Km inmesi ile, belirgin ucuzluk oluşmuştur. Kalite etkisi ile her 2,500Km'de karbüratör temizliği ve ek bakım gerekirken, 10binKm'de yapılmaktadır. Ardaki fark belirgindir. Ekonomi teriminin anlamı ile, değerlendirme boyutu daha net ortaya koymaktadır.

Hekim olarak tadına bakmadan, hiçbir ilacı çocuklara, bebeklere vermedim. Tat ve sunuluş önemli olmaktadır. Oral Hidrasyon için mide boşalmasına göre önce 5 dakikada 3-5mL iken, saatte 10-12defa 50mL olmakta, oldukça yüksek oran olabilmektedir. Kolera türünde 120mEq/L Na iken, Enterit tipi ishalde 35-60mEq/L olup, kolit tarzında, prematürelerde ise 15-25mEq/L olabilir. SF kapsamında 154mEq/L olduğu dikkate alınınca, sulandırılması hastaya göre olmaktadır. Şeker oranı fazla olursa, 15g/dL yüksek iken 5-10g/dL daha tolere edilebilen olabilmektedir. Şeker Na emilim pompa çalışması için de gereklidir. Kısaca belirtilmek istenen, yemek hazırlama gibi, verilecek su ve elektrolit kapsamları da aynı şekilde değil, bireye göre olmalıdır. Artık kitaplarda yazıldığı gibi değil, bireyin fikri ve beğenisi ile başlanmalı, uyumu ve tolere etmesi ile devam edilmeli, sonucu ise neticeye bakılmalıdır.

Oral Hidrasyon Tedavisinin ilk başlangıcı döneminde (1977), bir olguya oral sıvı yükleyerek, tüm açığı kapatılıp, ağızdan idame sıvısına geçilmişken, artık idame denilmiş, ancak hekim, derhal sıvı takmış ve standart kitap uygulamasına geçmiştir. Nedeni sorulduğunda, ben cesaret edemem demiştir. Kiloya 350-650mL oral Hidrasyon yapıldığı, bu açıdan sadece idame sıvı vermesini önerdim. Bu bir sefer değil, her uygulamada karşılaşılan bir tablo olmuştur. İnsanlar korku ile bilgi noksanlığının sonucu olmaktadır. Bu açıdan besin ile ortada dolaşan bilgiler uçuşmakta, doğruyu bulma konusu da çok zor olabilmektedir.

İnek Sütünü Anne Sütüne Yaklaştırmak

- İnek sütündeki değerleri[1] (W. F. Boron, E. L. Boulpaep. Medical Physiology, A cellular and Molecular Approach, Saunders, Philadelphia, 2003, sayfa 1187, Tablo:55-8): 100ml inek sütünün besin değerleri: Enerji: 69kcal, Yağ: 3,7g, Karbonhidrat (Laktoz): 4,8g, Protein (Kazein %82): 3,3g, Kalsiyum: 125mg, Demir (Fe mikro-g): 50, Fosfor: 96mg, Hücre: Yok.
- Anne sütündeki değerleri (W. F. Boron, E. L. Boulpaep. Medical Physiology, A cellular and Molecular Approach, Saunders, Philadelphia, 2003, sayfa 1187, Tablo:55-8): 100ml anne sütünün besin değerleri: Enerji: 70kcal, Yağ: 4,5g, Karbonhidrat (Laktoz): 7,1g, Protein (Kazein %44): 0,9g, Kalsiyum: 33mg, Demir (Fe mikro-g): 50, Fosfor: 15mg, Hücre: 1-2x10^6.
- Kolostrum, ilk anne sütündeki değerleri (W. F. Boron, E. L. Boulpaep. Medical Physiology, A cellular and Molecular Approach, Saunders, Philadelphia, 2003, sayfa 1187, Tablo:55-8): 100ml kolostrum sütünün besin değerleri: Enerji: 54kcal, Yağ: 2,9g, Karbonhidrat (Laktoz): 5,7g, Protein (kazein %44): 2,7g, Kalsiyum: 31mg, Demir (Fe mikro-g): 10, Fosfor: 14mg, Hücre: 7-8x10^6.

Bu değerlere göre adapte süt yapılması:

- 100mL inek sütü alınmalı.
- Karıştırılarak kaynatılmalı, kaymak oluşturulmamalı, taşmasını önlemelidir.
- 100 mL süt alınıp, 30 mL konulması, protein 1g olarak denkleşmesi

- Kalori 21 Kalori olmakta. 50 Kalori eklenmesi için şeker 1g/4 Kal olduğuna göre, 12,5gram, kısaca silme bir çorba kaşığı (15g), şeker konulmalıdır, 80 Kalori osmolar yük nedeniyle fazla değildir.
- Yağ 3,7g ise 4,5g yükseltmek için, 1,2 gram bitkisel yağ eklenmesi yararlı olacaktır. Bu durunda şeker boyutu 10 çay kaşığı, 3 kesme şeker yeterli olacaktır.
- Kalsiyum 125mg yüksek gibi görünse de Ca/P oranı 125/96, 1,3 olmakta, insanda ise 33/15, 2,2 oranındadır. Bu açıdan kalsiyum fosfora göre arttırılmalıdır. P oranı 29mg indiği için, bunun 2,5-4 oranı ile katılacak kalsiyum, 73-116 olmalı, içine 35-70mg kalsiyum eklenmelidir. Bu açıdan önerilen etkileşim içinde olmayan kalsiyum önerilir.
- Demir, 50mg olması, 15mg inmekte, ancak etkinlik gıda demiri olan 3 değerlikli önerilmektedir.
- Hücre açısından, çok eski tarihi kitaplarda, anne bebeğe vermeden önce ağzında çalkalamakta, tükürük katanlarda olmaktadır. Önerilen 1-2mL yoğurt suyu, süpernatan olabilir. Elbette ağızda gargara ve tükürük önerilemez.

ÖZET: Sütü 3 kat sulandırın, 3 kesme şeker koyun, 1mL sıvı yağ, ayrıca bebeğe verilen vitamin ve mineralleri de ekleyerek, hiç verilmemiş gibi, ayrıca vitamin ve mineral verilmesidir.
Hücre açısından az miktarda olsa da anne sütü eklenmelidir. Kolostrum yapılamaz, kapsam değil, hücre ve diğer özellikleri nedeni ile, mutlaka gerekirse pompa ile çekilerek verilmelidir.

Beslenmeye Bakış

Wikipedia tarafından sunulan beslenme bilgisi aşağıda sunularak irdelenmektedir. Burada besin ve beslenme açısından değil, sadece beslenmenin uygulanabilir be biyolojik kullanabilir açısından ele alınacaktır.

Beslenme konusunda bilgilerde çok farklı ve yanılma olması ile konu gündeme getirilmektedir.

1) Nutrition, Wikipedia[2].

Nutrition is the biochemical and physiological process by which an organism uses food to support its life. It includes ingestion, absorption, assimilation, biosynthesis, catabolism and excretion.[1]
The science that studies the physiological process of nutrition is called nutritional science (also *nutrition science*).

Yorum

Beslenmeyi biyokimyasal ve fizyolojik bir işlev olarak ele almakta, ancak bireyin doyumluluğu, tatmini ve zevk alması gibi bir konu gündeme getirilmemektedir.
Piknik ve kebap yapmak bir Kabile Kültürü olmasına karşın, tüm Kültürler kendisine göre bir sosyal boyut olarak oluşturmaktadırlar.
Baklava ve diğer tatlılar, bir damak tadı olarak, bir defa yiyenin senelerce tadı damağında kalabilen lezzetlerdir.

Birçok yerde, erkeklerin ancak midelerinden tavlanarak evlilik yapacakları ifadesi ile, bu boyutun bir kültürel yapı içinde olduğu anlaşılmaktadır. Sütlaç, her kültürde farklı yapılmaktadır. Bir erkek, eşinin çok güzel sütlaç yaptığını söyleyerek taktir etmiş, hanımı ise şeker yerine tuz koyduğunu fark ederek, hayret etmiş, ama konu aile geleneğine bağlı olduğu boyutu dikkate alındığında, kaynana şeker yerine tuz koyuyor ise, doğal karşılanabilir.

Nutritional groups
Organisms primarily provide themselves with carbon in one of two ways: autotrophy (the self-production of organic food) and heterotrophy (the consumption of existing organic carbon). Combined with the source of energy, either light (phototrophy) or chemical (chemotrophy), there are four primary nutritional groups for organisms.[2]
Nutrients
Nutrients are substances used by an organism to survive, grow, and reproduce. The seven major classes of relevant nutrients for animals (including humans) are carbohydrates, dietary fiber, fats, proteins, minerals, vitamins, and water. Nutrients can be grouped as either macronutrients (carbohydrates, dietary fiber, fats, proteins, and water needed in gram quantities) or micronutrients (vitamins and minerals needed in milligram or microgram quantities).

Yorum

Temel olarak bakıldığında bize enerji verenin karbon bileşikleri ile oluşturulan enerjinin saklanması ve bunun bedenimizde çözümlenerek, enerji vermesidir.
Tüm besinlerin ana kökeninde bitkilerdeki fotosentez olduğu, burada karbondioksit ve sudan oluşan bir yapı ile, şeker ve şeker yapısında olanlar oluşmaktadır.
Hayvanlarda da bu yapının oluşması, insanların daha hazırlanmış oluşumları da hayvanlardan almaktadırlar.

Bunlar: 1) **CHO**: Karbon, hidrojen ve oksijen birleşimi, temel olarak enerjimizin %50 kadarını almamız söz konusu olan yapılardır. Şeker ve çekirdek şeker olmak üzere, un, nişasta gibi yapılardır. 2) **Lifler**: Bunların sıklıkla selüloz yapısında olduğu, geviş getirenlerde, midelerindeki bakteriler ile selülozu parçalayarak kullanırken, insanlarda doğrudan atıldıkları, ancak posa oluşturarak fizyolojik açıdan yararlı oldukları tanımlanmaktadır. 3) **Yağlar**: Enerji açısından CHO 4 Kal/g verirken, bunlar 9Kal/g oluştururlar. CHO farkı, bağları daha dizi şeklindedir. Doymamış, çift bağlı yağlar esansiyeldir ve alınmalıdır, bunların bitkisel olduğu da önemlidir. 4) **Proteinler**: Yapı taşı olarak ele alınır, molekül içinde azot varır. Enerji verirken 5,6Kal/g verirken, azotun atılımı için harcama ile yine 4kal/g indirgenir. 5) **Mineraller**: Hücre işlemi için, adale kasılmasında örneğin kalsiyum gerekli iken, aynı zamanda kemik yapısında da stabil yapıya gereksinimi vardır. Tek iyonlu olan Na, K ve Cl yanında çift iyonlu olan Ca, Mg, Fosforda farklı açıdan ele alınmalıdır. Hücre içi ile hücre dışı etkileşim açısından, oluşturulan bir denge olarak önemlidir. Örneğin Ca hem iyonize hem albümine bağlı hem moleküllere bağlı ve kemiklerde de stabil olarak farklı yapıları oluşmaktadır. Bu açıdan işlev açısından mikro ve ultra düşük, mg, mikro yapısında da olabilmektedirler. 6) **Vitaminler**: Vitaminler bir işlevde katalizör rolü oynarlar. Bir arabada eklem yerlerinde yapın olması gibi, işlevde gereklidirler. Çeşitli şekilde işlevleri olabilmektedir, bu nedenle yağda ve suda eriyen gibi çeşitli formları vardır. 3) **Su**: Temelde sıvı hem hücre içi hem hücre dışı olmak üzere, maddelerin dağılımı, yayılımı ve etkileşimi için gereklidir. Özellikle prematürelerde oran %75, 80 gibi tüm vücut kapsamıdır. Bu açıdan sıvı alınmalı, atılmalı ve birçok birikenler de çıkarılmalıdır, örneğin yemek ile gelen osmolar yük atılmalıdır. Anne sütünde 100 altı iken, inek sütünde 200 üstü olması belirgin bir sıvı alımı ve atılmasını gerekli kılar.

Diet
In nutrition, the *diet* of an organism is the sum of foods it eats, which is largely determined by the availability and palatability of foods.
Human nutrition
Human nutrition deals with the provision of essential nutrients from food that are necessary to support human life and good health.[3]
In humans, poor nutrition can cause deficiency-related diseases such as blindness, anemia, scurvy, preterm birth, stillbirth and cretinism,[4] or nutrient excess health-threatening conditions such as obesity[5][6] and metabolic syndrome;[7] and such common chronic systemic diseases as cardiovascular disease,[8] diabetes,[9][10] and osteoporosis.[11][12][13] Undernutrition can lead to wasting in acute cases, and stunting of marasmus in chronic cases of malnutrition.[4]
Animal nutrition
Animal nutrition focuses on the dietary nutrients needs of animals, often in comparison (or contrast) to other organisms like plants. Carnivore and herbivore diets are contrasting, with basic nitrogen and carbon proportions vary for their particular foods. Many herbivores rely on bacterial fermentation to create digestible nutrients from indigestible plant cellulose, while obligate carnivores must eat animal meats to obtain certain vitamins or nutrients their bodies cannot otherwise synthesize. Animals generally have a higher requirement of energy in comparison to plants.[14]
Plant nutrition
Plant nutrition is the study of the chemical elements that are necessary for plant growth.[15] There are several principles that apply to plant nutrition. Some elements are directly involved in plant metabolism. However, this principle does not account for the so-called beneficial elements, whose presence, while not required, has clear positive effects on plant growth.
A nutrient that is able to limit plant growth according to Liebig's law of the minimum is considered an essential plant nutrient if the plant cannot complete its full life cycle without it. There are 16 essential plant soil nutrients, besides the three major elemental nutrients carbon and oxygen that are obtained by photosynthetic plants from carbon dioxide in air, and hydrogen, which is obtained from water.
Plants uptake essential elements from the soil through their roots and from the air (consisting of mainly nitrogen and oxygen) through their leaves. Green plants obtain their carbohydrate supply from the carbon dioxide in the air by the process of photosynthesis. Carbon and oxygen are absorbed from the air, while other nutrients are absorbed from the soil. Nutrient uptake in the soil is achieved by cation exchange, wherein root hairs pump hydrogen ions (H^+) into the soil through proton pumps. These hydrogen ions displace cations attached to negatively charged soil particles so that the cations are available for uptake by the root. In the leaves, stomata open to take in carbon dioxide and expel oxygen. The carbon dioxide molecules are used as the carbon source in photosynthesis.
Although nitrogen is plentiful in the Earth's atmosphere, very few plants can use this directly. Most plants, therefore, require nitrogen compounds to be present in the soil in which they grow. This is made possible by the fact that largely inert atmospheric nitrogen is changed in a nitrogen fixation process to biologically usable forms in the soil by bacteria.[16]

Plant nutrition is a difficult subject to understand completely, partially because of the variation between different plants and even between different species or individuals of a given clone. Elements present at low levels may cause deficiency symptoms, and toxicity is possible at levels that are too high. Furthermore, deficiency of one element may present as symptoms of toxicity from another element, and vice versa.[citation needed]

Yorum

Beslenmenin azlığı ve fazlalığı kadar bazı özellikle vitamin ve minerallerde eksiklikleri ile de sorunlar oluşmaktadır. Bu sorunlar sınırda oluşması ile fark edilmesi oldukça zordur. Ancak, prematüre ve yenidoğanlarda bu daha belirgin olmaktadır. Örneğin erişkinde aminoasitlerde 2-4 adedi esansiyel iken, bebeklerde 10-12 tanesi, hemen tümü esansiyel kapsamda olmaktadır. Kısaca alınmalıdır. Hayvanlar ve doğal olarak insanlar, bitkilerden temel besinlerini aldıkları için gerek ot yiyenler gerek et yiyenler farklı yapıda olsalar bile dokuları benzerdir.
Bitkilerin tüm Evrende olması ile, çok farklı yapıları ile enerji üreterek varlıklarını sağlamaktadırlar. Bitki olan yerde de hayvan varlığı konusu gündeme gelebilir. Fotosentez yapabilen ve bu şekilde dokularında oluşan ilkel hayvanlarda, bir bakıma iki yapıyı kendileri kapsamaktadırlar.

2) Palatability, Wikipedia[3]

Palatability is the hedonic reward (i.e., pleasure) provided by foods or fluids that are agreeable to the "palate", which often varies relative to the homeostatic satisfaction of nutritional, water, or energy needs.[1] The palatability of a food or fluid, unlike its flavor or taste, varies with the state of an individual: it is lower after consumption and higher when deprived. It has increasingly been appreciated that this can create a hunger that is independent of homeostatic needs.[2]

Brain mechanism

The palatability of a substance is determined by opioid receptor-related processes in the nucleus accumbens and ventral pallidum.[3] The opioid processes involve mu opioid receptors and are present in the rostromedial shell part of the nucleus accumbens[4] on its spiny neurons.[5] This area has been called the "opioid eating site".[6]

The reward-fulness of consumption associated with palatability is dissociable from desire or incentive value which is the motivation to seek out a specific commodity.[3] Desire or incentive value is processed by opioid receptor-related processes in the basolateral amygdala.[3] Unlike the liking palatability for food, the incentive salience wanting is not downregulated by the physiological consequences of food consumption and may be largely independent of homoeostatic processes influencing food intake.[7]

Though the wanting of incentive salience may be informed by palatability it is independent and not necessarily reduced to it.[3] It has been suggested that a third system exists that links opioid processes in the two parts of the brain: "Logically this raises the possibility that a third system, with which the accumbens shell, ventral pallidum, and basolateral amygdala are associated, distributes the affective signals elicited by specific commodities across distinct functional systems to control reward seeking... At present we do not have any direct evidence for a system of this kind, but indirect evidence suggests it may reside within the motivationally rich circuits linking hypothalamic and brainstem viscerogenic structures such as the parabrachial nucleus.[3]

It has also been suggested that "hedonic hunger" can be driven both in regard to "wanting" and "liking"[2] and that a palatability subtype of neuron may also exist in the basolateral amygdala.[8]

Satiety and palatability

Appetite is controlled by a direct loop and an indirect one. In both the direct and indirect loops there are two feedback mechanisms. First a positive feedback involving its stimulation by palatability food cues, and second, a negative feedback due to satiation and satiety cues following ingestion.[9] In the indirect loop these cues are learnt by association such as meal plate size and work by modulating the potency of the cues of the direct loop.[10] The influence of these processes can exist without subjective awareness.[11] The cessation of a desire to eat after a meal "satiation" is likely to be due to different processes and cues.[12] More palatable foods reduce the effects of such cues upon satiation causing a larger food intake.[13][14] In contrast, unpalatability of certain foods can serve as a deterrent from feeding on those foods in the future. For example, the variable checkerspot butterfly contains iridoid compounds that are unpalatable to avian predators, thus reducing the risk of predation.[15]

Yorum

Damak Tadı olarak belirtilen bir yapı dikkate ele alınınca, insanlar susayınca su içerler, acıkınca da yemek yerler. Eğer su istediği şeklinde değilse içmezler, yemekte beğenmezler ise, kokuyorsa örneğin yemezler.
Köpekler 2,5 aylık olunca laktoz entoleransı olur, bu açıdan süt yememeleri gerekir, kedi gibi olmazlar. İshal kolera tipi su çekici tarzda olan, su gibi çıkmaya neden olur.
Mutluluk yaratılması, şeker alınması ile de benzer yapı oluştuğu, endorfin gibi etkileşim ile, bir bakıma bağımlılık yaptığı söylense bile bu aşırı yorumdur. Oluşan yapı, emzirerek bebek kendisi kesmektedir. Aynı şekilde, insülin salınımı ve beyindeki uyaranlar olmasına karşın, birey doydum diyebilmektedir. Obes, şişman olanlarda sorun, aynı zamanda ruhsal tatmin boyutunu da gündeme getirmektedir.
Şekerli, tatlılarda bu durumun, bağımlılığın daha fazla olması, hormon ötesinde, damak tadı olarak tanımlanması daha gerçekçi olabilir.

Doyma, emziren bebek için oluşurken, biberon ile beslenen, belirli bir miktarı alması beklenir, bu miktar doyma, gereksinim üstü olduğu için, doysa bile verilir. Kısaca bebekler doymayı öğrenemezler.

SONUÇ: Besin ve beslenme, tamamen bireyin kişiliğini de oluşturan bir boyut olmaktadır. Ne yediğini söyle, neyi sevdiğini belirt, hangi yöre ve kültürel yapıda olduğunu ve kişiliğini tanımlamak olasıdır.

3) Human nutrition, Wikipedia[4].

Human nutrition deals with the provision of essential nutrients in food that are necessary to support human life and good health.[1] Poor nutrition is a chronic problem often linked to poverty, food security, or a poor understanding of nutritional requirements.[2] Malnutrition and its consequences are large contributors to deaths, physical deformities, and disabilities worldwide.[3] Good nutrition is necessary for children to grow physically and mentally, and for normal human biological development.[2]

Overview

The human body contains chemical compounds such as water, carbohydrates, amino acids (found in proteins), fatty acids (found in lipids), and nucleic acids (DNA and RNA). These compounds are composed of elements such as carbon, hydrogen, oxygen, nitrogen, and phosphorus. Any study done to determine nutritional status must take into account the state of the body before and after experiments, as well as the chemical composition of the whole diet and of all the materials excreted and eliminated from the body (including urine and feces).

Yorum

İnsan sağlığı için besinin yeri çok önemlidir. Bu nedenle ruhsatsız hiçbir gıda satılmamaktadır. Sağlık Bakanlığı, tıbbi boyutta olanlar ile ilgilidir. Vitaminler tıbbi boyutta ise Sağlık Bakanlığı, eğer gıda katkısı şeklinde ise Tarım Bakanlığı ilgili olmaktadır. Amerika'da FDA, Food, Drug ile ikisi birlikte olmaktadır.
İnsan sağlığı ve bedeni açısından besin, yaşam işlevi ötesinde, çocuklarda büyüme ve gelişme boyutu için gereklidir. Örneğin protein 20-24 toplam aminoasit varken, bunun yarısı ve yarısından çoğunu esansiyel olarak almalıdır. Erişkinde bu 2-4 adet olarak tanımlanabilir.

Besin olarak adı belirtilmesine karşın, durumları da önemlidir. Kalsiyum emilebilen, etkin kullanılabilen önemlidir, kalsiyum karbonat alınsa bile emilebilir değildir.

Temel olan, tüm besinler karbon ve su ile oluşmakta, azot ile protein olup, yapı taşı etkinliği oluşması, temelde basit bir hidrolize karbonun yaşam yaptığı bir yaratılış gerçeğidir.

Nutrients

The seven major classes of nutrients are carbohydrates, fats, fiber, minerals, proteins, vitamins, and water.[4] Nutrients can be grouped as either macronutrients or micronutrients (needed in small quantities). Carbohydrates, fats, and proteins are macronutrients, and provide energy.[5] Water and fiber are macronutrients but do not provide energy,[6] The micronutrients are minerals and vitamins.[7]

The macronutrients (excluding fiber and water) provide structural material (amino acids from which proteins are built, and lipids from which cell membranes and some signaling molecules are built), and energy. Some of the structural material can also be used to generate energy internally, and in either case it is measured in Joules or kilocalories (often called "Calories" and written with a capital 'C' to distinguish them from little 'c' calories). Carbohydrates and proteins provide 17 kJ approximately (4 kcal) of energy per gram, while fats provide 37 kJ (9 kcal) per gram,[8] though the net energy from either depends on such factors as absorption and digestive effort, which vary substantially from instance to instance.

Vitamins, minerals, fiber,[9] and water do not provide energy but are required for other reasons. A third class of dietary material, fiber (i.e., nondigestible material such as cellulose), seems also to be required, for both mechanical and biochemical reasons, though the exact reasons remain unclear. For all age groups, males on average need to consume higher amounts of macronutrients than females. In general, intakes increase with age until the second or third decade of life.[10]

Some nutrients can be stored - the fat-soluble vitamins - while others are required more or less continuously. Poor health can be caused by a lack of required nutrients, or for some vitamins and minerals, too much of a required nutrient. *Essential* nutrients cannot be synthesized by the body and must be obtained from food.

Molecules of carbohydrates and fats consist of carbon, hydrogen, and oxygen atoms. Carbohydrates range from simple monosaccharides (glucose, fructose, galactose) to complex polysaccharides (starch). Fats are triglycerides, made of assorted fatty acid monomers bound to a glycerol backbone. Some fatty acids, but not all, are essential in the diet: they cannot be synthesized in the body. Protein molecules contain nitrogen atoms in addition to carbon, oxygen, and hydrogen.[11] The fundamental components of protein are nitrogen-containing amino acids, some of which are essential in the sense that humans cannot make them internally. Some of the amino acids are convertible (with the expenditure of energy) to glucose and can be used for energy production just as ordinary glucose, in a process known as gluconeogenesis. By breaking down existing protein, some glucose can be produced internally; the remaining amino acids are discarded, primarily as urea in urine. This occurs naturally when atrophy takes place, or during periods of starvation.[*citation needed*]

The list of nutrients that people are known to require is, in the words of Marion Nestle, "almost certainly incomplete".[12]

Yorum

Besin, sadece enerji vermesi değil, metabolizmada yeri ve etkinliği de önemlidir. D vitamini olarak D1, D2 ve D3 olup, etkin olan D3 olup, Ca emilimini sağlayan etkisi vardır.

Glikoz SGLT1 Na bağlı taşıyıcı ile hücreye alınır, enterosit alınır, früktoz için GLUT5 kolaylaştırıcı difüzyon ile içeri girer. İçeri girdikten sonra, GLUT taşıyıcı ile SGLT Na/glikoz karşı taşıyıcı ile olmaktadır. Bu hücreler arası mesafeyedir, ayrıca buradan hücre içine alınması da ayrıca oluşmakta, insülin katkısı önemlidir.
Sonuçta alınması ile enerji vereceği anlamı taşımaz. Örneğin laktoz entoleransı olunca, sindirilemez, şeker su çeker ve ishal oluşturur, hemen gözlenir.

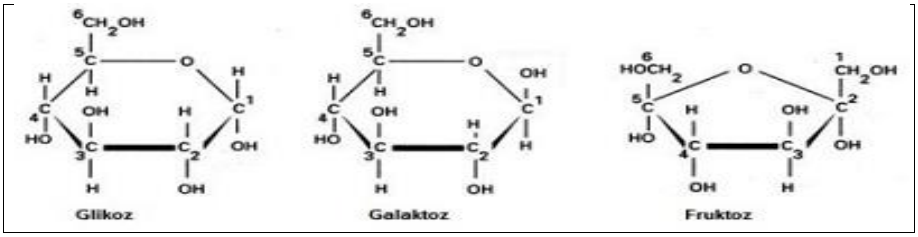
Alınması önemlidir ama başlangıçtır.

Carbohydrates
Carbohydrates may be classified as monosaccharides, disaccharides or polysaccharides depending on the number of monomer (sugar) units they contain. They are a diverse group of substances, with a range of chemical, physical and physiological properties.[13] They make up a large part of foods such as rice, noodles, bread, and other grain-based products,[14][15] but they are not an essential nutrient, meaning a human does not need to eat carbohydrates.[16] The brain is the largest consumer of sugars in the human body, and uses particularly large amounts of glucose, accounting for 20% of total body glucose consumption.[17] The brain uses mostly glucose for energy; if glucose is insufficient however, it switches to using fats.[18]
Monosaccharides contain one sugar unit, disaccharides two, and polysaccharides three or more. Monosaccharides include glucose, fructose and galactose.[19] Disaccharides include sucrose, lactose, and maltose; purified sucrose, for instance, is used as table sugar.[20] Polysaccharides, which include starch and glycogen, are often referred to as 'complex' carbohydrates because they are typically long multiple-branched chains of sugar units.
Traditionally, simple carbohydrates were believed to be absorbed quickly, and therefore raise blood-glucose levels more rapidly than complex carbohydrates. This, however, is not accurate.[21][22][23][24] Some simple carbohydrates (e.g., fructose) follow different metabolic pathways (e.g., fructolysis) that result in only a partial catabolism to glucose, while, in essence, many complex carbohydrates may be digested at the same rate as simple carbohydrates.[25] The World Health Organization recommends that added sugars should represent no more than 10% of total energy intake.[26]
The most common plant carbohydrate nutrient – starch – varies in its absorption. Starches have been classified as rapidly digestible starch, slowly digestible starch and resistant starch.[27] Starches in plants are resistant to digestion (resistant starch), but cooking the starch in the presence of water can break down the starch granule and releases the glucose chains, making them more easily digestible by human digestive enzymes.[28] Historically, food was less processed and starches were contained within the food matrix, making them less digestible.[29] Modern food processing has shifted carbohydrate consumption from less digestible and resistant starch to much more rapidly digestible starch.[30][31] For instance, the resistant starch content of a traditional African diet was 38 grams/day.[32] The resistant starch consumption from countries with high starch intakes has been estimated to be 30-40 grams/day.[33] In contrast, the average consumption of resistant starch in the United States was estimated to be 4.9 grams/day (range 2.8-7.9 grams of resistant starch/day).[34]

Yorum

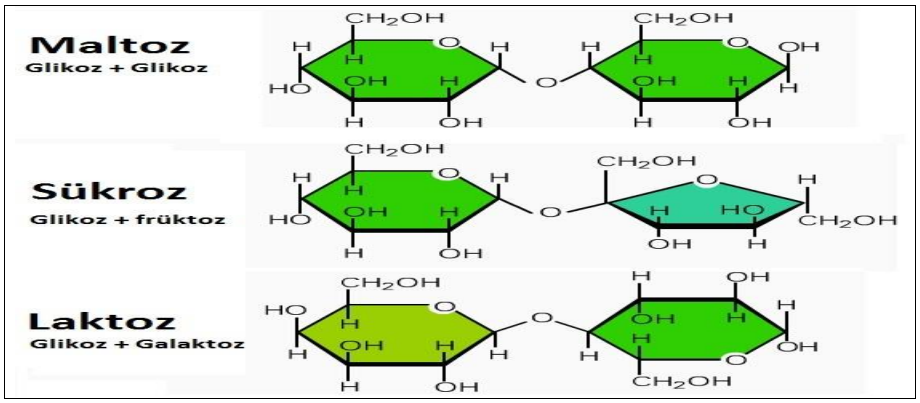
CHO, karbonun hidrat formları olup, bunlar tekli şeker, çiftli ve çoklu olarak tanımlanabilir. Tekli olanlar, glikoz, früktoz ve galaktoz olarak tanımlanır. Glikoz 6 karbonlu, früktoz 5 karbonludur. Süt şekerinde parçalanma ile glikoz ve galaktoz oluşur, burada eğer galaktoz entoleransı varsa, her süt alışta, bebeğin hastalığı ağırlaşmış olacaktır. Burada anne sütü en az etki yaptığı dikkate alınmalıdır. Her sütün etkisi farklıdır. Bağırsakta, özellikle kalın bağırsakta bakteriler olduğu dikkate alınınca tekli şeker alınınca bakterilerin kullanması daha kolay olmaktadır. İkili şekerler ise sindirilerek emildiği için, gıdalarda temel olan şekerdir. Süt şekerinde glikoz + galaktoz, pancar şekerinde sukroz vardır, glikoz + früktozdan oluşur. Maltoz, glikoz + glikozdan oluşur. Nişastada ise glikoz yapısının uzaması, 1-4 bağı ile 1-6 bağının olması ile karmaşık yapı oluşur.
Şekerlerin ana tek şekerlerinin yapısal farklılığı aşağıdaki şekilde görülecektir.

Tekli Şekerlerin açık formülü (Google arama, www.biyologlar.com/glikoz-nedir[5])



Şekil/Grafik 1: C atomu ile özellikle, 1 no'lu ile, 4, 6 karbonların uzun olarak yaptıkları bağlar öne çıkmakta, şekerlerin yapısını değiştirmektedir.

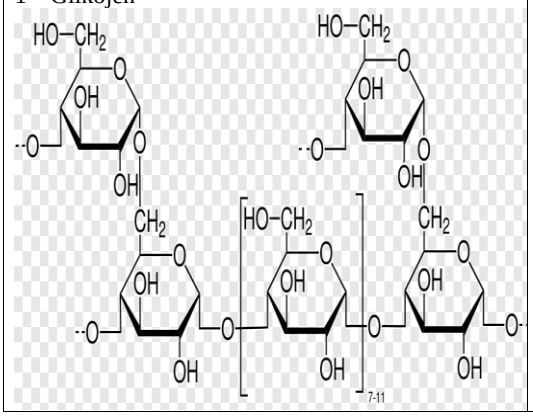
İkili Şekerlerin (Disakkarit) açık formülü (Google arama[6])



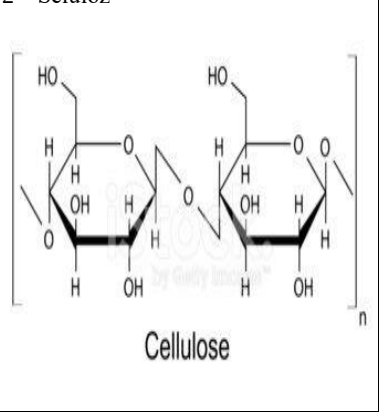
Şekil/Grafik 2: C atomu ile oluşan bağlarda, Oksijen atomunun rolü önemlidir.

Glikojen ve selülozun açık formülü (Google arama[7])

1---Glikojen



2---Selüloz



Şekil/Grafik 3: C atomu ile oluşan 1-4 ile 1-6 bağlarda oluşmaktadır. Hayvanlar selüloz bağlarını parçalayamazlar, işkembedeki bakteriler ile parçalanır ve sonra tüketilirler.

Tekli şeker hemen emildiği belirtilse de yine belirli işlemlerden geçmesi gerekir. Doğrudan mukozadan emilmemekte, emilmesi için belirli mekanizma gereklidir. Molekül ağırlığı yüksek olduğu için doğrudan geçmemektedir.

İkili şekerler enzimatik işlemden geçmeli, bunun yararı, mikroplar kullanmadan doğrudan emilebilmektedirler.

Nişasta ise bitkisel enerji deposudur. Yağlanma ötesinde bu boyut daha önemlidir. Orkide tohumlarında nişasta olmadığı için, ayrıca dıştan besin desteği gereklidir. Hayvan ve insanlarda ise yağ olarak depo edilirler.

Karaciğerde glikojen olarak depo edildiği de bilinmekte, ayrıca adalelerde de glikojen bulunmaktadır.

Yapılar birbirine benzer görülse de bağlantı yerleri farklıdır. Früktoz ise 5 adet temel karbonludur.

Bebeklerin tahıl olması söz konusu edilemez, ayrıca hidrolize edilmesi ile oluşan glikoz yapılarının da sindirim sorunları açısından önerilmemektedir.

Fat

A molecule of dietary fat typically consists of several fatty acids (containing long chains of carbon and hydrogen atoms), bonded to a glycerol. They are typically found as triglycerides (three fatty acids attached to one glycerol backbone). Fats may be classified as saturated or unsaturated depending on the chemical structure of the fatty acids involved. Saturated fats have all of the carbon atoms in their fatty acid chains bonded to hydrogen atoms, whereas unsaturated fats have some of these carbon atoms double-bonded, so their molecules have relatively fewer hydrogen atoms than a saturated fatty acid of the same length. Unsaturated fats may be further classified as monounsaturated (one double-bond) or polyunsaturated (many double-bonds). Furthermore, depending on the location of the double-bond in the fatty acid chain, unsaturated fatty acids are classified as omega-3 or omega-6 fatty acids. Trans fats are a type of unsaturated fat with *trans*-isomer bonds; these are rare in nature and in foods from natural sources; they are typically created in an industrial process called (partial) hydrogenation. There are nine kilocalories in each gram of fat. Fatty acids such as conjugated linoleic acid, catalpic acid, eleostearic acid and punicic acid, in addition to providing energy, represent potent immune modulatory molecules.

Saturated fats (typically from animal sources) have been a staple in many world cultures for millennia. Unsaturated fats (e. g., vegetable oil) are considered healthier, while trans fats are to be avoided. Saturated and some trans fats are typically solid at room temperature (such as butter or lard), while unsaturated fats are typically liquids (such as olive oil or flaxseed oil). Trans fats are very rare in nature, and have been shown to be highly detrimental to human health, but have properties useful in the food processing industry, such as rancidity resistance.[35]

Essential fatty acids

Most fatty acids are non-essential, meaning the body can produce them as needed, generally from other fatty acids and always by expending energy to do so. However, in humans, at least two fatty acids are essential and must be included in the diet. An appropriate balance of essential fatty acids—omega-3 and omega-6 fatty acids—seems also important for health, although definitive experimental demonstration has been elusive. Both of these "omega" long-chain polyunsaturated fatty acids are substrates for a class of eicosanoids known as prostaglandins, which have roles throughout the human body.

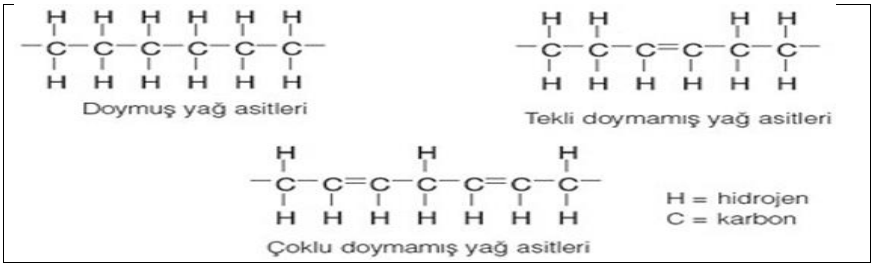
The omega-3 eicosapentaenoic acid (EPA), which can be made in the human body from the omega-3 essential fatty acid alpha-linolenic acid (ALA), or taken in through marine food sources, serves as a building block for series 3 prostaglandins (e.g., weakly inflammatory PGE3). The omega-6 dihomo-gamma-linolenic acid (DGLA) serves as a building block for series 1 prostaglandins (e.g., anti-inflammatory PGE1), whereas arachidonic acid (AA) serves as a building block for series 2 prostaglandins (e.g., pro-inflammatory PGE 2). Both DGLA and AA can be made from the omega-6 linoleic acid (LA) in the human body, or can be taken in directly through food. An appropriately balanced intake of omega-3 and omega-6 partly determines the relative production of different prostaglandins. In industrialized societies, people typically consume large amounts of processed vegetable oils, which have reduced amounts of the essential fatty acids along with too much of omega-6 fatty acids relative to omega-3 fatty acids.

The conversion rate of omega-6 DGLA to AA largely determines the production of the prostaglandins PGE1 and PGE2. Omega-3 EPA prevents AA from being released from membranes, thereby skewing prostaglandin balance away from pro-inflammatory PGE2 (made from AA) toward anti-inflammatory PGE1 (made from DGLA). The conversion (desaturation) of DGLA to AA is controlled by the enzyme delta-5-desaturase, which in turn is controlled by hormones such as insulin (up-regulation) and glucagon (down-regulation).

Yorum

Omega 3, 6 ve 9 şeklindeki ifade, kaçıncı karbonda çift bağ olmasından söz edilmektedir, bitkisel yapıda olurlar, doymuş olanlar hayvansal kökenlidirler. Trans yağlar ise doğal bulunmadığı ifade edilen, trans-izomerleridir.
Balıklardan alınan yağlar ile alfa-linoleik asit ve 3 prostaglandin de rol oynarlar.

Yağların yapısı (Google arama[8])



Şekil/Grafik 4: C ve H atomu ile oluşmakta, doymamış bağlar, bitkisel yağlarda olup esansiyeldir.

Kısaca yağlar depo enerjilerdir. Doymamışlar esansiyel, dışardan alınmalıdırlar, bu açıdan gereklidir, depo olanlar doymuş yağlardır. Bunların tek hücrede vakuol olarak depolanması, hücrelerin oksijenlenmesine de zarar görmesine de neden olabilmektedir.

Fiber
Dietary fiber is a carbohydrate, specifically a polysaccharide, which is incompletely absorbed in humans and in some animals. Like all carbohydrates, when it is metabolized, it can produce four Calories (kilocalories) of energy per gram, but in most circumstances, it accounts for less than that because of its limited absorption and digestibility.
The two subcategories are *insoluble* and *soluble* fiber.
Insoluble dietary fiber
Includes cellulose, a large carbohydrate polymer that is indigestible by humans, because humans do not have the required enzymes to break it down, and the human digestive system does not harbor enough of the types of microbes that can do so.
Includes resistant starch, an insoluble starch that resists digestion either because it is protected by a shell or food matrix (Type 1 resistant starch, RS1), maintains the natural starch granule (Type 2 resistant starch, RS2), is retrograded and partially crystallized (Type 3 resistant starch, RS3), has been chemically modified (Type 4 resistant starch, RS4) or has complexed with a lipid (Type 5 resistant starch, RS5).[30] Natural sources of resistant starch (RS1, RS2 and RS3) are fermented by the microbes in the human digestive system to produce short-chain fatty acids which are utilized as food for the colonic cells or absorbed.[30]
Soluble dietary fiber
Comprises a variety of oligosaccharides, waxes, esters, and other carbohydrates that dissolve or gelatinize in water. Many of these soluble fibers can be fermented or partially fermented by microbes in the human digestive system to produce short-chain fatty acids which are absorbed and therefore introduce some caloric content.[36]
Whole grains, beans, and other legumes, fruits (especially plums, prunes, and figs), and vegetables are good sources of dietary fiber. Fiber has three primary mechanisms, which in general determine their health impact: bulking, viscosity and fermentation.[37] Fiber provides bulk to the intestinal contents, and insoluble fiber facilitates peristalsis – the rhythmic muscular contractions of the intestines which move contents along the digestive tract. Some soluble and insoluble fibers produce a solution of high viscosity; this is essentially a gel, which slows the movement of food through the intestines. Fermentable fibers are used as food by the microbiome, mildly increasing bulk, and producing short-chain fatty acids and other metabolites, including vitamins, hormones, and glucose. One of these metabolites, butyrate, is important as an energy source for colon cells, and may improve metabolic syndrome.[38][39]
In 2016, the U.S. FDA approved a qualified health claim stating that resistant starch might reduce the risk of type 2 diabetes, but with qualifying language for product labels that only limited scientific evidence exists to support this claim. The FDA requires specific labeling language, such as the guideline concerning resistant starch: "High-amylose maize resistant starch may reduce the risk of type 2 diabetes. FDA has concluded that there is limited scientific evidence for this claim."[40]

Yorum

Yenidoğan dönemi açısından çok önemli olmadığı için üzerinde durulmamaktadır.
Bağırsak işlevi için, Mikrobiyomlar, flora öneli olup, sindirilmeyen gıda ile pasaj tıkanmamaktadır.

Amino acids
Proteins are the basis of many animals' body structures (e.g., muscles, skin, and hair) and form the enzymes that control chemical reactions throughout the body. Each protein molecule is composed of amino acids which contain nitrogen and sometimes sulphur (these components are responsible for the distinctive smell of burning protein, such as the keratin in hair). The body requires amino acids to produce new proteins (protein retention) and to replace damaged proteins (maintenance). Amino acids are soluble in the digestive juices within the small intestine, where they are absorbed into the blood. Once absorbed, they cannot be stored in the body, so they are either metabolized as required or excreted in the urine.[*medical citation needed*] Proteins consist of amino acids in different proportions. The most important aspect and defining characteristic of protein from a nutritional standpoint is its amino acid composition.[41]
For all animals, some amino acids are *essential* (an animal cannot produce them internally so they must be eaten) and some are *non-essential* (the animal can produce them from other nitrogen-containing compounds). About twenty amino acids are found in the human body, and about ten of these are essential. The synthesis of some amino acids can be limited under special pathophysiological conditions, such as prematurity in the infant or individuals in severe catabolic distress, and those are called conditionally essential.[41]
A diet that contains adequate amounts of amino acids (especially those that are essential) is particularly important in some situations: during early development and maturation, pregnancy, lactation, or injury (a burn, for instance). A complete protein source contains all the essential amino acids; an incomplete protein source lacks one or more of the essential amino acids. It is possible with protein combinations of two incomplete protein sources (e.g., rice and beans) to make a complete protein source, and characteristic combinations are the basis of distinct cultural cooking traditions. However, complementary sources of protein do not need to be eaten at the same meal to be used together by the body.[42] Excess amino acids from protein can be converted into glucose and used for fuel through a process called gluconeogenesis.
There is an ongoing debate about the differences in nutritional quality and adequacy of protein from vegan, vegetarian and animal sources, though many studies and institutions have found that a well-planned vegan or vegetarian diet contains enough high-quality protein to support the protein requirements of both sedentary and active people at all stages of life.[43][44][45][46]

Yorum

Protein aminoasit dizilimleri ve bazı faktörler ile oluşmaktadır. Çocuklarda alınması gerekenler amino asitlerin yarısı kadardır, bu açıdan bir besinde yapım için gerekenlerin tümü olmalıdır. LCF (En düşük Çarpan Sayı) şeklinde olmalı, a) aminoasit tipi ile b) miktarına göre alınır, yapıma gider.
Kan aminoasit düzeylerine göre hazırlanan damardan verilecek sıvı başarılı olmayınca, anne sütü proteinlerine uygun olarak hazırlanan daha başarılı olmuştur. Kısaca osmolar yükü minimal olmalıdır.
İçine konulan yağ olarak doğrudan fazla doymamış olanlar tercih edilirken, halen zeytin yağı gibi karma olanlar tercih edilmektedir.

Water
Water is excreted from the body in multiple forms; including urine and feces, sweating, and by water vapour in the exhaled breath. Therefore, it is necessary to adequately rehydrate to replace lost fluids.

Early recommendations for the quantity of water required for maintenance of good health suggested that 6–8 glasses of water daily is the minimum to maintain proper hydration.[47] However the notion that a person should consume eight glasses of water per day cannot be traced to a credible scientific source.[48] The original water intake recommendation in 1945 by the Food and Nutrition Board of the National Research Council read: "An ordinary standard for diverse persons is 1 milliliter for each calorie of food. Most of this quantity is contained in prepared foods."[49] More recent comparisons of well-known recommendations on fluid intake have revealed large discrepancies in the volumes of water we need to consume for good health.[50] Therefore, to help standardize guidelines, recommendations for water consumption are included in two recent European Food Safety Authority (EFSA) documents (2010): (i) Food-based dietary guidelines and (ii) Dietary reference values for water or adequate daily intakes (ADI).[51] These specifications were provided by calculating adequate intakes from measured intakes in populations of individuals with "desirable osmolarity values of urine and desirable water volumes per energy unit consumed."[51]
For healthful hydration, the current EFSA guidelines recommend total water intakes of 2.0 L/day for adult females and 2.5 L/day for adult males. These reference values include water from drinking water, other beverages, and from food. About 80% of our daily water requirement comes from the beverages we drink, with the remaining 20% coming from food.[52] Water content varies depending on the type of food consumed, with fruit and vegetables containing more than cereals, for example.[53] These values are estimated using country-specific food balance sheets published by the Food and Agriculture Organisation of the United Nations.[53]
The EFSA panel also determined intakes for different populations. Recommended intake volumes in the elderly are the same as for adults as despite lower energy consumption, the water requirement of this group is increased due to a reduction in renal concentrating capacity.[51] Pregnant and breastfeeding women require additional fluids to stay hydrated. The EFSA panel proposes that pregnant women should consume the same volume of water as non-pregnant women, plus an increase in proportion to the higher energy requirement, equal to 300 mL/day.[51] To compensate for additional fluid output, breastfeeding women require an additional 700 mL/day above the recommended intake values for non-lactating women. Dehydration and over-hydration - too little and too much water, respectively - can have harmful consequences. Drinking too much water is one of the possible causes of hyponatremia, i.e., low serum sodium.[51][54]

Yorum

Vücudumuzda sıvı serbest, bardaktaki gibi değildir, bağıl olup akmaz. Bir bakıma SF tuzun molekülleri ile tutulan su söz konusudur. Kısaca serbest su yoktur.
Molekül ötesinde fibriller ile de sabit tutulmaktadır.

Anne sütünde su yoktur, tümü plazma gibi bağıldır.

Minerals
Dietary minerals are inorganic chemical elements required by living organisms,[55] other than the four elements carbon, hydrogen, nitrogen, and oxygen that are present in nearly all organic molecules. Some have roles as cofactors, while others are electrolytes.[56] The term "mineral" is archaic, since the intent is to describe simply the less common elements in the diet. Some are heavier than the four just mentioned – including several metals, which often occur as ions in the body. Some dietitians recommend that these be supplied from foods in which they occur naturally, or at least as complex compounds, or sometimes even from natural inorganic sources (such as calcium carbonate from ground oyster shells). Some are absorbed much more readily in the ionic forms found in such sources. On the other hand, minerals are often artificially added to the diet as supplements; the most well-known is likely iodine in iodized salt which prevents goiter.[*medical citation needed*]

Macro-minerals
Elements with recommended dietary allowance (RDA) greater than 150 mg/day are, in alphabetical order:

- Calcium (Ca^{2+}) is vital to the health of the muscular, circulatory, and digestive systems; is indispensable to the building of bone; and supports the synthesis and function of blood cells. For example, calcium is used to regulate the contraction of muscles, nerve conduction, and the clotting of blood. It can play this role because the Ca^{2+} ion forms stable coordination complexes with many organic compounds, especially proteins; it also forms compounds with a wide range of solubility, enabling the formation of the skeleton.[57]
- Chlorine as chloride ions; very common electrolyte; see sodium, below.
- Magnesium, required for processing ATP and related reactions (builds bone, causes strong peristalsis, increases flexibility, increases alkalinity). Approximately 50% is in bone, the remaining 50% is almost all inside body cells, with only about 1% located in extracellular fluid. Food sources include oats, buckwheat, tofu, nuts, caviar, green leafy vegetables, legumes, and chocolate.[58][59]
- Phosphorus, required component of bones; essential for energy processing.[60] Approximately 80% is found in the inorganic portion of bones and teeth. Phosphorus is a component of every cell, as well as important metabolites, including DNA, RNA, ATP, and phospholipids. Also important in pH regulation. It is an important electrolyte in the form of phosphate.[61] Food sources include cheese, egg yolk, milk, meat, fish, poultry, whole-grain cereals, and many others.[58]
- Potassium, a common electrolyte (heart and nerve function). With sodium, potassium is involved in maintaining normal water balance, osmotic equilibrium, and acid-base balance. In addition to calcium, it is important in the regulation of neuromuscular activity. Food sources include bananas, avocados, nuts, vegetables, potatoes, legumes, fish, and mushrooms.[59]
- Sodium, a common food ingredient and electrolyte, found in most foods and manufactured consumer products, typically as sodium chloride (salt). Excessive sodium consumption can deplete calcium and magnesium.[62] Sodium has a role in the etiology of hypertension demonstrated from studies showing that a reduction of table salt intake may reduce blood pressure.[63][64]

Trace minerals
Many elements are required in smaller amounts (microgram quantities), usually because they play a catalytic role in enzymes.[65] Some trace mineral elements (RDA < 200 mg/day) are, in alphabetical order:[*medical citation needed*]

- Cobalt as a component of the vitamin B_{12} family of coenzymes
- Copper required component of many redox enzymes, including cytochrome c oxidase (see Copper in health)
- Chromium required for sugar metabolism
- Iodine required not only for the biosynthesis of thyroxin, but probably, for other important organs as breast, stomach, salivary glands, thymus etc. (see Iodine deficiency); for this reason iodine is needed in larger quantities than others in this list, and sometimes classified with the macro minerals;[66] Nowadays it is most easily found in iodized salt, but there are also natural sources such as *Kombu*.[67][68]
- Iron required for many enzymes, and for hemoglobin and some other proteins
- Manganese (processing of oxygen)
- Molybdenum required for xanthine oxidase and related oxidases
- Selenium required for peroxidase (antioxidant proteins)

- Zinc required for several enzymes such as carboxypeptidase, liver alcohol dehydrogenase, carbonic anhydrase

Ultra-trace minerals

Ultra-trace minerals are an as yet unproven aspect of human nutrition and may be required at amounts measured in very low ranges of µg/day. Many ultratrace elements have been suggested as essential, but such claims have usually not been confirmed. Definitive evidence for efficacy comes from the characterization of a biomolecule containing the element with an identifiable and testable function. These include:[69][70]

- Bromine
- Arsenic
- Nickel
- Fluorine
- Boron
- Lithium
- Strontium
- Silicon
- Vanadium

Yorum

Tüm mineraller ile alakalı belirtilenler kapalı ve sadece vücutta bulunmasına göre ifade edilmiştir. Çok detaylı metabolik işlevleri vardır.
Burada konu edilmeyecektir.

Vitamins

Except for vitamin D, vitamins are essential nutrients,[55] necessary in the diet for good health. Vitamin D can be synthesized in the skin in the presence of UVB radiation. (Many animal species can synthesize vitamin C, but humans cannot.) Certain vitamin-like compounds that are recommended in the diet, such as carnitine, are thought useful for survival and health, but these are not "essential" dietary nutrients because the human body has some capacity to produce them from other compounds. Moreover, thousands of different phytochemicals have recently been discovered in food (particularly in fresh vegetables), which may have desirable properties including antioxidant activity (see below); experimental demonstration has been suggestive but inconclusive. Other essential nutrients not classed as vitamins include essential amino acids (see above), essential fatty acids (see above), and the minerals discussed in the preceding section.[*medical citation needed*]

Vitamin deficiencies may result in disease conditions: goiter, scurvy, osteoporosis, impaired immune system, disorders of cell metabolism, certain forms of cancer, symptoms of premature aging, and poor psychological health (including eating disorders), among many others.[71]

Excess levels of some vitamins are also dangerous to health. The Food and Nutrition Board of the Institute of Medicine has established Tolerable Upper Intake Levels (ULs) for seven vitamins.[72]

Malnutrition

The term malnutrition addresses 3 broad groups of conditions:

- Undernutrition, which includes wasting (low weight-for-height), stunting (low height-for-age) and underweight (low weight-for-age)
- Micronutrient-related malnutrition, which includes micronutrient deficiencies or insufficiencies (a lack of important vitamins and minerals) or micronutrient excess
- Overweight, obesity and diet-related noncommunicable diseases (such as heart disease, stroke, diabetes, and some cancers).[73]

In developed countries, the diseases of malnutrition are most often associated with nutritional imbalances or excessive consumption; there are more people in the world who are malnourished due to excessive consumption. According to the United Nations World Health Organization, the greatest challenge in developing nations today is not starvation, but insufficient nutrition – the lack of nutrients necessary for the growth and maintenance of vital functions. The causes of malnutrition are directly linked to inadequate macronutrient consumption and disease, and are indirectly linked to factors like “household food security, maternal and child care, health services, and the environment.”[3]

Insufficient

The U.S. Food and Nutrition Board sets Estimated Average Requirements (EARs) and Recommended Dietary Allowances (RDAs) for vitamins and minerals. EARs and RDAs are part of Dietary Reference Intakes.[74] The DRI documents describe nutrient deficiency signs and symptoms.

Excessive

The U.S. Food and Nutrition Board sets Tolerable Upper Intake Levels (known as ULs) for vitamins and minerals when evidence is sufficient. ULs are set a safe fraction below amounts shown to cause health problems. ULs are part of Dietary Reference Intakes.[74] The European Food Safety Authority also reviews the same safety questions and set its own ULs.[75]

Unbalanced

When too much of one or more nutrients is present in the diet to the exclusion of the proper amount of other nutrients, the diet is said to be unbalanced. High calorie food ingredients such as vegetable oils, sugar and alcohol are referred to as "empty calories" because they displace from the diet foods that also contain protein, vitamins, minerals and fiber.[76]

Illnesses caused by underconsumption and overconsumption

Nutrients	Deficiency	Excess
Macronutrients		
Calories	Starvation, marasmus	Obesity, diabetes mellitus, cardiovascular disease
Simple carbohydrates	None	Obesity, diabetes mellitus, cardiovascular disease
Complex carbohydrates	None	Obesity, cardiovascular disease (high glycemic index foods)
Protein	Kwashiorkor	Obesity, Rabbit starvation
Saturated fat	Low testosterone levels,[77] vitamin deficiencies[*citation needed*]	Obesity, cardiovascular disease[78]
Trans fat	None	Obesity, cardiovascular disease
Unsaturated fat	Fat-soluble vitamin deficiency	Obesity, cardiovascular disease
Micronutrients		

Vitamin A	Xerophthalmia, night blindness, and low testosterone levels[citation needed]	Hypervitaminosis A (cirrhosis, hair loss)
Vitamin B_1	Beri-Beri	?
Vitamin B_2	Skin and corneal lesions, cracking of skin and corneal unclearation	?
Niacin	Pellagra	Dyspepsia, cardiac arrhythmias, birth defects
Biotin	Biotin deficiency	Reproductive and teratogenic effects
Vitamin B_{12}	Pernicious anemia	?
Vitamin C	Scurvy	Diarrhea causing dehydration
Vitamin D	Rickets, Hypovitaminosis D, poor immune system function[citation needed], poor balance,[citation needed] inflammation[citation needed]	Hypervitaminosis D (dehydration, vomiting, constipation)
Vitamin E	Neurological disease	Hypervitaminosis E (anticoagulant: excessive bleeding)
Vitamin K	Hemorrhage	Liver damage
Omega-3 fats	Cardiovascular Disease	Bleeding, hemorrhages, hemorrhagic stroke, reduced glycemic control among diabetics
Omega-6 fats	None	Cardiovascular disease, Cancer
Cholesterol	During development: deficiencies in myelinization of the brain; demyelination of the brain and neurodegenerative diseases (multiple sclerosis, Alzheimer's disease)[citation needed]	Cardiovascular disease[78]
Macrominerals		
Calcium	Osteoporosis, tetany, carpopedal spasm, laryngospasm, cardiac arrhythmias	Fatigue, depression, confusion, nausea, vomiting, constipation, pancreatitis, increased urination, kidney stones, anorexia[citation needed]
Magnesium	Hypertension	Weakness, nausea, vomiting, impaired breathing, and hypotension
Potassium	Hypokalemia, cardiac arrhythmias	Hyperkalemia, palpitations
Sodium	Hyponatremia	Hypernatremia, hypertension
Trace minerals		
Iron	Anemia	Cirrhosis, Hereditary hemochromatosis, heart disease, cardiovascular disease
Iodine	Goiter, hypothyroidism	Iodine toxicity (goiter, hypothyroidism)

Yorum

Vitaminler bir enzimin işlevi için kofaktör veya enzimi modüle eden olmaktadır. Bu açıdan çok az oranda olması, etkili olması açısından etkinliği önemlidir.
Az veya çok olması elbet sorun yaratmaktadır.

Other substances

Alcohol (ethanol)

Pure ethanol provides 7 calories per gram. For distilled spirits, a standard serving in the United States is 1.5 fluid ounces, which at 40% ethanol (80 proof), would be 14 grams and 98 calories.[79] Wine and beer contain a similar range of ethanol for servings of 5 ounces and 12 ounces, respectively, but these beverages also contain non-ethanol calories. A 5-ounce serving of wine contains 100 to 130 calories. A 12-ounce serving of beer contains 95 to 200 calories.[80] According to the U.S. Department of Agriculture, based on NHANES 2013-2014 surveys, women ages 20 and up consume on average 6.8 grams/day and men consume on average 15.5 grams/day.[81] Ignoring the non-alcohol contribution of those beverages, the average ethanol calorie contributions are 48 and 108 cal/day. Alcoholic beverages are considered empty calorie foods because other than calories, these contribute no essential nutrients.

Phytochemicals

Phytochemicals such as polyphenols are compounds produced naturally in plants (phyto means "plant" in Greek). In general, the term identifies compounds that are prevalent in plant foods but are not proven to be essential for human nutrition, as of 2018. There is no conclusive evidence in humans that polyphenols or other non-nutrient compounds from plants confer health benefits, mainly because these compounds have poor bioavailability, i.e., following ingestion, they are digested into smaller metabolites with unknown functions, then are rapidly eliminated from the body.[82][83]

While initial studies sought to reveal if dietary supplements might promote health, one meta-analysis concluded that supplementation with antioxidant vitamins A and E and beta-carotene did not convey any benefits, and may increase risk of death.[84] Vitamin C and selenium supplements did not impact mortality rate. Health effect of non-nutrient phytochemicals such as polyphenols were not assessed in this review.[85]

Intestinal microbiome

The intestines contain a large population of gut flora. In humans, the four dominant phyla are Firmicutes, Bacteroidetes, Actinobacteria, and Proteobacteria.[86] They are essential to digestion and are also affected by food that is consumed. Bacteria are essential for metabolizing food substrates and thereby increasing energy output, and produce a great variety of metabolites, including vitamins and short-chain fatty acids that contribute to the metabolism in a wide variety of ways.[87] These metabolites are responsible for stimulating cell growth, repressing the growth of harmful bacteria, priming the immune system to respond only to pathogens, helping to maintain a healthy gut barrier, control gene expression by epigenetic regulation[88] and defending against some infectious diseases.[89]

Global nutrition challenges

Yorum

Besinler kapsamında birçok boyutu da olmaktadır.
Mikrobiyomlar, bağırsak florasındaki yapı, önemli bir bağışıklık boyutu ile, yaşam için önemlidir.

Disease
Child malnutrition
Undernutrition: …
Adult overweight and obesity: …
Vitamin and mineral malnutrition: …

Yorum

Bu makalede hastalıklar, noksanlıklar ve fazlalıklardan söz edilmeyecektir.

Infant and young child feeding

Improvement of breast feeding practices, like early initiation and exclusive breast feeding for the first two years of life, could save the lives of 1.5 million children annually.[117] Nutrition interventions targeted at infants aged 0–5 months first encourages early initiation of breastfeeding.[3] Though the relationship between early initiation of breast feeding and improved health outcomes has not been formally established, a recent study in Ghana suggests a causal relationship between early initiation and reduced infection-caused neo-natal deaths.[3] Also, experts promote exclusive breastfeeding, rather than using formula, which has shown to promote optimal growth, development, and health of infants.[118] Exclusive breastfeeding often indicates nutritional status because infants that consume breast milk are more likely to receive all adequate nourishment and nutrients that will aid their developing body and immune system. This leaves children less likely to contract diarrheal diseases and respiratory infections.[2]

Besides the quality and frequency of breastfeeding, the nutritional status of mothers affects infant health. When mothers do not receive proper nutrition, it threatens the wellness and potential of their children.[2] Well-nourished women are less likely to experience risks of birth and are more likely to deliver children who will develop well physically and mentally.[2] Maternal undernutrition increases the chances of low-birth weight, which can increase the risk of infections and asphyxia in fetuses, increasing the probability of neonatal deaths.[119] Growth failure during intrauterine conditions, associated with improper mother nutrition, can contribute to lifelong health complications.[3] Approximately 13 million children are born with intrauterine growth restriction annually.[120]

Yorum

Yenidoğan ve bebeklik döneminde gereken tüm besinlerin, gebelikte anne karnında kandan alması gibi, memeden almaktadır. Emzirme sayesinde hem cilt, cilde temas, aynı zamanda taze enzim ve kök hücreler, lökositler geçerek, aynı zamanda Probiyotikler ile etkin bir büyüme be gelişme sağlayabilmektedir.
Bebek doymayı ve etik ilkeleri, memeyi ilk gördüğü yabancı olarak algılayarak, onu kullanmayı, oynamayı da öğrenmektedir.

Anorexia nervosa: …
Nutrition literacy

The findings of the 2003 National Assessment of Adult Literacy (NAAL), conducted by the US Department of Education, provide a basis upon which to frame the nutrition literacy problem in the U.S. NAAL introduced the first-ever measure of "the degree to which individuals have the capacity to obtain, process and understand basic health information and services needed to make appropriate health decisions" – an objective of Healthy People 2010[122] and of which nutrition literacy might be considered an important subset. On a scale of below basic, basic, intermediate, and proficient, NAAL found 13 percent of adult Americans have proficient health literacy, 44% have intermediate literacy, 29 percent have basic literacy and 14 percent have below basic health literacy. The study found that health literacy increases with education and people living below the level of poverty have lower health literacy than those above it.

Another study examining the health and nutrition literacy status of residents of the lower Mississippi Delta found that 52 percent of participants had a high likelihood of limited literacy skills.[123] While a precise comparison between the NAAL and Delta studies is difficult, primarily because of methodological differences, Zoellner et al. suggest that health literacy rates in the Mississippi Delta region are different from the U.S. general population and that they help establish the scope of the problem of health literacy among adults in the Delta region. For example, only 12 percent of study participants identified the My Pyramid graphic two years after it had been launched by the USDA. The study also found significant relationships between nutrition literacy and income level and nutrition literacy and educational attainment[123] further delineating priorities for the region.

These statistics point to the complexities surrounding the lack of health/nutrition literacy and reveal the degree to which they are embedded in the social structure and interconnected with other problems. Among these problems are the lack of information about food choices, a lack of understanding of nutritional information and its application to individual circumstances, limited or difficult access to healthful foods, and a range of cultural influences and socioeconomic constraints such as low levels of education and high levels of poverty that decrease opportunities for healthful eating and living.

The links between low health literacy and poor health outcomes has been widely documented[124] and there is evidence that some interventions to improve health literacy have produced successful results in the primary care setting. More must be done to further our understanding of nutrition literacy specific interventions in non-primary care settings[123] in order to achieve better health outcomes.

Yorum

Sağlık konusunda her kültürel bakışta farklı algılar olmaktadır. Dolayısıyla plasebo faktörü sanki tıbbi fayda olarak yorumlanmaktadır ki, kanıta-dayalı bir gerçeklilik yoktur. Faydalı olduğunu söyleyen fayda görür, faydasız olduğunu ifade eden de fayda görmez, sübjektif dayanakları vardır

Eğitim teorik ötesi, pratik yapmak, gönülden, akıl ile yapmak ile olur. Emzirme de istek, sevgi ve insanlık ile olur, zorla olamaz.

International food insecurity and malnutrition
United States
Industrialized countries
South Asia
Eastern and Southern Africa
West and Central Africa
Middle East and North Africa
East Asia and the Pacific
Latin America and the Caribbean
Nutrition interventions

Yorum

Her toplumun beslenmeye, emzirmeye bakış açısı farklıdır, bu ülkeler olarak ele alınmış olsa da kültürel yapıları yönlendirmektedir.

Implementation and delivery platforms
Nutrition education
Advice and guidance
Government policies
Government programs
Education

Nutrition is taught in schools in many countries. In England and Wales, the Personal and Social Education and Food Technology curricula

Professional organizations

Yorum

Beslenme konusunda ders gördükten sonra, yakındaki bir AKM'ye 10 kişilik grup ile giderek inceleme yaparız. Ben protein kaynağını sıklıkla temel alırım ve inek sütünde 3,3g/dL olması, sonra keçi sütündeki 5g/dL bakıp, adapte olanların 2g/dL olması ile iyi olmadıklarını beyin fırtınası ile söyler, sonra da anne sütünde 1,5g/dL diyerek tercih edilmemeli deyince, hepsi fark ederler. Tam buğday ekmeğinde 11g/100g, ayrıca fasulyede 22g/100g olması ile akıllar karışmakta ve dolayısı ile anne sütü kapsamında bir yemek hazırlanmasını öğütlerim.

Pediatri stajı sonunda iki ayda bir, pide içi hazırlanır ve ortak yenir. Burada esas %50 CHO, %15 Protein ve %35 kalorisi yağdan olmalı, sebze katkısı da önemli olmalıdır. Karmaşık bir besin içine yoğurt katarak Probiyotik dengesi sağlanır ve besin bir miktar fermantasyona bırakılır.

Bebeklere muhallebi yapmayan kişinin Pediatri stajından geçmemesi temel olmalıdır. Arkasındaki tarife göre değil, medikal yol ile yapmalıdır. En az sütü yarı, yarıya sulandırmalı, karıştırılarak parçalanması, koyulaşması, şekersiz iken olmalıdır. En son şeker katılmalıdır, bunun %5-10 oranını geçmemelidir. Kısaca enerjisi 80Kal/100mL, protein 2g/dL, olmalıdır.

Nutrition for special populations
Sports nutrition

The protein requirement for each individual differs, as do opinions about whether and to what extent physically active people require more protein. The 2005 Recommended Dietary Allowances (RDA), aimed at the general healthy adult population, provide for an intake of 0.8 grams of protein per kilogram of body weight.[41] A review panel stating that "no additional dietary protein is suggested for healthy adults undertaking resistance or endurance exercise."[145]

The main fuel used by the body during exercise is carbohydrates, which is stored in muscle as glycogen – a form of sugar. During exercise, muscle glycogen reserves can be used up, especially when activities last longer than 90 min.[146]

Maternal nutrition
Paediatric nutrition

Adequate nutrition is essential for the growth of children from infancy right through until adolescence. Some nutrients are specifically required for growth on top of nutrients required for normal body maintenance, in particular calcium and iron.[147]

Elderly nutrition
Malnutrition in general is higher among the elderly but has different aspects in developed and undeveloped countries.[148]
History of human nutrition
Nutrition in antiquity

Yorum

Meslek olarak yapılmadığı sürece, çalışma yaşamında yapılan için ekstra kalori almaya gerek yoktur.
Besin kavramında, a) Besin öğeleri, Protein, yağ, CHO ve diğerleri, b) Besinler, yumurta, süt, anne sütü, gibi, c) İnsanların ihtiyaçları, bebek, çocuk gereksinimleri ve d) Besin ihtiyaçları, sağlıklı insanın spor yapması dışında, koşucular, maraton koşanlar örnek verilebilir, e) Hastalıklarda beslenme olarak ele alınabilir.

Tüm yukarıdaki genel yaklaşımdır, bireye göre özel ve özgün yemek konu edilmelidir.

18th century until today: food processing and nutrition
Research of nutrition and nutritional science
Antiquity: Start of scientific research on nutrition
Anaxagoras
1st to 17th century
18th and 19th century: Lind, Lavoisier, and modern science
Early 20th century
Institutionalization of nutritional science in the 1950s

Genel Yorum

Konu beslenme olduğu, eksikliği ve hastalık grubu ile tarihsel boyut dikkate alınmamıştır.
Beslenme bireye göre olmalıdır. Uzay için belirli solüsyonlar hazırlanmış, daha sonra bunlar besin ile değiştirilmişlerdir.

Bioavailability, Wikipedia[9]

In pharmacology, **bioavailability** (***BA or F***) is a subcategory of absorption and is the fraction (%) of an administered drug that reaches the systemic circulation.[1]
By definition, when a medication is administered intravenously, its bioavailability is 100%.[2][3] However, when a medication is administered via routes other than intravenous, its bioavailability is generally[TH] lower than that of intravenous due to intestinal endothelium absorption and first-pass metabolism. Thereby, mathematically, bioavailability equals the ratio of comparing the area under the plasma drug concentration curve versus time (AUC) for the extravascular formulation to the AUC for the intravascular formulation.[4] AUC is utilized because AUC is proportional to the dose that has entered the systemic circulation.[5]
Bioavailability of a drug is an average value; to take population variability into account, deviation range is shown as ±.[4] To ensure that the drug taker who has poor absorption is dosed appropriately, the bottom value of the deviation range is employed to represent real bioavailability and to calculate the drug dose needed for the drug taker to achieve systemic concentrations similar to the intravenous formulation.[4] To dose without knowing the drug taker's absorption rate, the bottom value of the deviation range is used in order to ensure the intended efficacy, unless the drug is associated with a narrow therapeutic window.[4]
For dietary supplements, herbs and other nutrients in which the route of administration is nearly always oral, bioavailability generally designates simply the quantity or fraction of the ingested dose that is absorbed.[6][7][8]

Yorum

Damardan verilen ilaç dozu yüksek olur, oral alınan ise daha düşük olacaktır. Buna karşın damardan olan daha kısa süreli, oral alınan daha uzun olacaktır.
İlacın başlangıcı, tepe nokrası, platosu ve sonra atılımı, metabolize olması, kalıntıları dikkate alınmalıdır.

İlacın etkinliği için, antibiyotik için, MIC, kısaca üremesinin durdurulması, sonra bozulması ve öldürülmesi Bu açıdan, her ilacın, her bireyin farklı metabolizması, fizyolojisi olacağı için ona göre yaklaşım yapılmalıdır. Prematürelerde sıvı oranı yüksek ise, o zaman ilk doz, iki defa yapılmalıdır. Daha sonra metabolize olmasına göre ek destek sağlanmalıdır.

Penisilin tüm mikropları öldürebilir ama dozu çok yüksek olacağı için etkin olmadığı söylenebilir. Direnç mekanizmasında da testler, farklı dozlar ile olmakta, buna göre tahmini kan düzeyine göre yaklaşım yapılmalıdır.

Ekonomi açısından; 1) Etkinlik, 2) Verimlilik, 3) Uygulanabilir olması, 4) Memnuniyet oluşturması dikkate alındığında, Tıbbi ekonomi ise birey temelinde olmasıdır. Etkinlik boyutunda kitaba değil, hastaya insana bakılır, onun cevabı incelenir.

Definition

In pharmacology

Bioavailability is a term used to describe the percentage of an administered dose of a xenobiotic that reaches the systemic circulation.[9] It is denoted by the letter *f* (or, if expressed in percent, by *F*).

In nutritional science

In nutritional science, which covers the intake of nutrients and non-drug dietary ingredients, the concept of bioavailability lacks the well-defined standards associated with the pharmaceutical industry. The pharmacological definition cannot apply to these substances because utilization and absorption is a function of the nutritional status and physiological state of the subject,[10] resulting in even greater differences from individual to individual (inter-individual variation). Therefore, bioavailability for dietary supplements can be defined as the proportion of the administered substance capable of being absorbed and available for use or storage.[11]

In both pharmacology and nutrition sciences, bioavailability is measured by calculating the area under curve (AUC) of the drug concentration time profile.

In environmental sciences or sciences

Bioavailability is the measure by which various substances in the environment may enter into living organisms. It is commonly a limiting factor in the production of crops (due to solubility limitation or absorption of plant nutrients to soil colloids) and in the removal of toxic substances from the food chain by microorganisms (due to sorption to or partitioning of otherwise degradable substances into inaccessible phases in the environment). A noteworthy example for agriculture is plant phosphorus deficiency induced by precipitation with iron and aluminum phosphates at low soil pH and precipitation with calcium phosphates at high soil pH.[12] Toxic materials in soil, such as lead from paint may be rendered unavailable to animals ingesting contaminated soil by supplying phosphorus fertilizers in excess.[13] Organic pollutants such as solvents or pesticides[14] may be rendered unavailable to microorganisms and thus persist in the environment when they are adsorbed to soil minerals[15] or partition into hydrophobic organic matter.[16]

Absolute bioavailability

Absolute bioavailability compares the bioavailability of the active drug in systemic circulation following non-intravenous administration (i.e., after oral, buccal, ocular, nasal, rectal, transdermal, subcutaneous, or sublingual administration), with the bioavailability of the same drug following intravenous administration. It is the fraction of the drug absorbed through non-intravenous administration compared with the corresponding intravenous administration of the same drug. The comparison must be dose normalized (e.g., account for different doses or varying weights of the subjects); consequently, the amount absorbed is corrected by dividing the corresponding dose administered.

In pharmacology, in order to determine absolute bioavailability of a drug, a pharmacokinetic study must be done to obtain a *plasma drug concentration vs time* plot for the drug after both intravenous (iv) and extravascular (non-intravenous, i.e., oral) administration. The absolute bioavailability is the dose-corrected area under curve (*AUC*) non-intravenous divided by *AUC* intravenous. The formula for calculating the absolute bioavailability, *F*, of a drug administered orally (po) is given below (where *D* is dose administered).

Therefore, a drug given by the intravenous route will have an absolute bioavailability of 100% ($f = 1$), whereas drugs given by other routes usually have an absolute bioavailability of *less* than one. If we compare the two different dosage forms having same active ingredients and compare the two-drug bioavailability is called comparative bioavailability.[*citation needed*]

Although knowing the true extent of systemic absorption (referred to as absolute bioavailability) is clearly useful, in practice it is not determined as frequently as one may think. The reason for this is that its assessment requires an *intravenous reference*; that is, a route of administration that guarantees all of the administered drug reaches systemic circulation. Such studies come at considerable cost, not least of which is the necessity to conduct preclinical toxicity tests to ensure adequate safety, as well as potential problems due to solubility limitations. These limitations may be overcome, however, by administering a very low dose (typically a few micrograms) of an isotopically labelled drug concomitantly with a therapeutic non-isotopically labelled oral dose (the isotopically-labelled intravenous dose is sufficiently low so as not to perturb the systemic drug concentrations achieved from the non-labelled oral dose). The intravenous and oral concentrations can then be deconvoluted by virtue of their different isotopic constitution and can thus be used to determine the oral and intravenous pharmacokinetics from the same dose administration. This technique eliminates pharmacokinetic issues with non-equivalent clearance as well as enabling the intravenous dose to be administered with a minimum of toxicology and formulation. The technique was first applied using stable-isotopes such as ^{13}C and mass-spectrometry to distinguish the isotopes by mass difference. More recently, ^{14}C labelled drugs are administered intravenously and accelerator mass spectrometry (AMS) used to measure the isotopically labelled drug along with mass spectrometry for the un-labeled drug.[17]

There is no regulatory requirement to define the intravenous pharmacokinetics or absolute bioavailability however regulatory authorities do sometimes ask for absolute bioavailability information of the extravascular route in cases in which the bioavailability is apparently low or variable and there is a proven relationship between the pharmacodynamics and the pharmacokinetics at therapeutic doses. In all such cases, to conduct an absolute bioavailability study requires that the drug be given intravenously.[18]

Intravenous administration of a developmental drug can provide valuable information on the fundamental pharmacokinetic parameters of volume of distribution (*V*) and clearance (*CL*).[18]

Relative bioavailability and bioequivalence

In pharmacology, relative bioavailability measures the bioavailability (estimated as the *AUC*) of a formulation (A) of a certain drug when compared with another formulation (B) of the same drug, usually an established standard, or through administration via a different route. When the standard consists of intravenously administered drug, this is known as absolute bioavailability (see above).

Relative bioavailability is one of the measures used to assess bioequivalence (*BE*) between two drug products. For FDA approval, a generic manufacturer must demonstrate that the 90% confidence interval for the ratio of the mean responses (usually of *AUC* and the maximum concentration, C_{max}) of its product to that of the "brand name drug"[OB] is within the limits of 80% to 125%. Where *AUC* refers to the concentration of the drug in the blood over time $t = 0$ to $t = \infty$, C_{max} refers to the maximum concentration of the drug in the blood. When T_{max} is given, it refers to the time it takes for a drug to reach C_{max}.

While the mechanisms by which a formulation affects bioavailability and bioequivalence have been extensively studied in drugs, formulation factors that influence bioavailability and bioequivalence in nutritional supplements are largely unknown.[19] As a result, in nutritional sciences, relative bioavailability or bioequivalence is the most common measure of bioavailability, comparing the bioavailability of one formulation of the same dietary ingredient to another.

Factors influencing bioavailability

The absolute bioavailability of a drug, when administered by an extravascular route, is usually less than one (i.e., $F < 100\%$). Various physiological factors reduce the availability of drugs prior to their entry into the systemic circulation. Whether a drug is taken with or without food will also affect absorption, other drugs taken concurrently may alter absorption and first-pass metabolism, intestinal motility alters the dissolution of the drug and may affect the degree of chemical degradation of the drug by intestinal microflora. Disease states affecting liver metabolism or gastrointestinal function will also have an effect.

Other factors may include, but are not limited to:

- Physical properties of the drug (hydrophobicity, pKa, solubility)

- The drug formulation (immediate release, excipients used, manufacturing methods, modified release – delayed release, extended release, sustained release, etc.)
- Whether the formulation is administered in a fed or fasted state
- Gastric emptying rate
- Circadian differences
- Interactions with other drugs/foods:
  - Interactions with other drugs (e.g., antacids, alcohol, nicotine)
  - Interactions with other foods (e.g., grapefruit juice, pomello, cranberry juice, brassica vegetables
- Transporters: Substrate of efflux transporters (e.g. P-glycoprotein)
- Health of the gastrointestinal tract
- Enzyme induction/inhibition by other drugs/foods:
  - Enzyme induction (increased rate of metabolism), e.g., Phenytoin induces CYP1A2, CYP2C9, CYP2C19, and CYP3A4
  - Enzyme inhibition (decreased rate of metabolism), e.g., grapefruit juice inhibits CYP3A → higher nifedipine concentrations
- Individual variation in metabolic differences
  - Age: In general, drugs are metabolized more slowly in fetal, neonatal, and geriatric populations
  - Phenotypic differences, enterohepatic circulation, diet, gender
- Disease state
  - E.g., hepatic insufficiency, poor renal function

Each of these factors may vary from patient to patient (inter-individual variation), and indeed in the same patient over time (intra-individual variation). In clinical trials, inter-individual variation is a critical measurement used to assess the bioavailability differences from patient to patient in order to ensure predictable dosing.

Bioavailability of drugs versus dietary supplements

In comparison to drugs, there are significant differences in dietary supplements that impact the evaluation of their bioavailability. These differences include the following: the fact that nutritional supplements provide benefits that are variable and often qualitative in nature; the measurement of nutrient absorption lacks the precision; nutritional supplements are consumed for prevention and well-being; nutritional supplements do not exhibit characteristic dose-response curves; and dosing intervals of nutritional supplements, therefore, are not critical in contrast to drug therapy.[11]

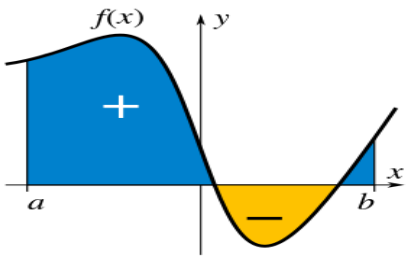
In addition, the lack of defined methodology and regulations surrounding the consumption of dietary supplements hinders the application of bioavailability measures in comparison to drugs. In clinical trials with dietary supplements, bioavailability primarily focuses on statistical descriptions of mean or average AUC differences between treatment groups, while often failing to compare or discuss their standard deviations or inter-individual variation. This failure leaves open the question of whether or not an individual in a group is likely to experience the benefits described by the mean-difference comparisons. Further, even if this issue were discussed, it would be difficult to communicate meaning of these inter-subject variances to consumers and/or their physicians.

Nutritional science: reliable and universal bioavailability

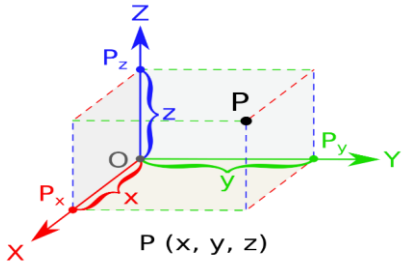
One way to resolve this problem is to define "reliable bioavailability" as positive bioavailability results (an absorption meeting a predefined criterion) that include 84% of the trial subjects and "universal bioavailability" as those that include 98% of the trial subjects. This reliable-universal framework would improve communications with physicians and consumers such that, if it were included on products labels for example, make educated choices as to the benefits of a formulation for them directly. In addition, the reliable-universal framework is similar to the construction of confidence intervals, which statisticians have long offered as one potential solution for dealing with small samples, violations of statistical assumptions or large standard deviations.[20]

Emilim düz olumlu, olumsuz değildir karmaşık yapıdadır (Wikipedia)

1)---İntegral (Wikipedia[10])



2)—Üç alansal boyut, three-dimensional space **Wikipedia[11]**



Şekil/Grafik 5: Yararlı olma konusu veya olumsuzluk boyutu, basit düzlemede değil, karmaşıktır. Üçlü alansak düzlem boyutu (in three-dimensional space) ekleyerek zaman süreci de oluşmakta, bu açıdan izlem önemlidir.

Yorum

Biyolojik etkileşimler ile birçok konu gündeme gelmiş olsa da sağlık boyutunda, mutlaka izlem ve sonuç olarak dışkılamaya bakılmalıdır.
Burada literatür verisi verilecek ancak, makalede üzerine değinilmeyecektir.

Etkileşim integral ve üç boyutlu süreç, ile irdelenmektedir. Ancak zaman faktörü eklenmeli, bu da dördüncü boyut olmaktadır. İzlem önemlidir.

Integral, Wikipedia[10]

In mathematics, an **integral** assigns numbers to functions in a way that describes displacement, area, volume, and other concepts that arise by combining infinitesimal data. The process of finding integrals is called **integration**. Along with differentiation, integration is a fundamental, essential operation of calculus,[a] and serves as a tool to solve problems in mathematics and physics involving the area of an arbitrary shape, the length of a curve, and the volume of a solid, among others.
The integrals enumerated here are those termed **definite integrals**, which can be interpreted formally as the signed area of the region in the plane that is bounded by the graph of a given function between two points in the real line. Conventionally, areas above the horizontal axis of the plane are positive while areas below are negative. Integrals also refer to the concept of an antiderivative, a function whose derivative is the given function. In this case, they are called **indefinite integrals**. The fundamental theorem of calculus relates definite integrals with differentiation and provides a method to compute the definite integral of a function when its antiderivative is known.
Although methods of calculating areas and volumes dated from ancient Greek mathematics, the principles of integration were formulated independently by Isaac Newton and Gottfried Wilhelm Leibniz in the late 17th century, who thought of the area under a curve as an infinite sum of rectangles of infinitesimal width. Bernhard Riemann later gave a rigorous definition of integrals, which is based on a limiting procedure that approximates the area of a curvilinear region by breaking the region into thin vertical slabs.
Integrals may be generalized depending on the type of the function as well as the domain over which the integration is performed. For example, a line integral is defined for functions of two or more variables, and the interval of integration is replaced by a curve connecting the two endpoints of the interval. In a surface integral, the curve is replaced by a piece of a surface in three-dimensional space.

Biological value, Wikipedia[12]

Biological value (**BV**) is a measure of the proportion of absorbed protein from a food which becomes incorporated into the proteins of the organism's body. It captures how readily the digested protein can be used in protein synthesis in the cells of the organism. Proteins are the major source of nitrogen in food. BV assumes protein is the only source of nitrogen and measures the amount of nitrogen ingested in relation to the amount which is subsequently excreted. The remainder must have been incorporated into the proteins of the organism's body. A ratio of nitrogen incorporated into the body over nitrogen absorbed gives a measure of protein "usability" – the BV.
Unlike some measures of protein usability, biological value does not take into account how readily the protein can be digested and absorbed (largely by the small intestine). This is reflected in the experimental methods used to determine BV.
BV uses two similar scales:

1. The true percentage utilization (usually shown with a percent symbol).
2. The percentage utilization relative to a readily utilizable protein source, often egg (usually shown as unitless).

The two values will be similar but not identical.
The BV of a food varies greatly and depends on a wide variety of factors. In particular the BV value of a food varies depending on its preparation and the recent diet of the organism. This makes reliable determination of BV difficult and of limited use — fasting prior to testing is universally required in order to ascertain reliable figures.
BV is commonly used in nutrition science in many mammalian organisms, and is a relevant measure in humans.[1] It is a popular guideline in bodybuilding in protein choice.[2][3]

Yorum

Biyolojik Değer kavramında: 1) Faydalanma ile, 2) kullanılabile protein kaynağı olarak ele alınmaktadır. İkisi benzer olsa da aynı değildir.
Temel protein enerji için değil, yapıma yönlenmesi ile biyolojik değerliliği algılanmalıdır.

Biyolojik Değerin algılanması aşağıda irdelenmektedir.

Determination of BV
For accurate determination of BV:[4]

1. the test organism must only consume the protein or mixture of proteins of interest (the test diet).
2. the test diet must contain no non-protein sources of nitrogen.
3. the test diet must be of suitable content and quantity to avoid use of the protein primarily as an energy source.

These conditions mean the tests are typically carried out over the course of over one week with strict diet control. Fasting prior to testing helps produce consistency between subjects (it removes recent diet as a variable).
There are two scales on which BV is measured: percentage utilization and relative utilization. By convention percentage BV has a percent sign (%) suffix and relative BV has no unit.
Percentage utilization
Biological value is determined based on this formula.[4][5]
$BV = (Nr / N_a) * 100$
Where:
N_a = nitrogen absorbed in proteins on the test diet
N_r = nitrogen incorporated into the body on the test diet
However direct measurement of N_r is essentially impossible. It will typically be measured indirectly from nitrogen excretion in urine.[6] Faecal excretion of nitrogen must also be taken into account - this part of the ingested protein is not absorbed by the body and so not included in the calculation of BV. An estimate is used of the amount of the urinary and faecal nitrogen excretion not coming from ingested nitrogen. This may be done by substituting a protein-free diet and observing nitrogen excretion in urine or faeces, but the accuracy of this method of estimation of the amount of nitrogen excretion not coming from ingested nitrogen on a protein-containing diet has been questioned.
$BV = ((N_i - N_{e(f)} - N_{e(u)}) / (N_i - N_{e(f)})) * 100$
Where:
N_i = nitrogen intake in proteins on the test diet

$N_{e(f)}$ = (nitrogen excreted in faeces whilst on the test diet) - (nitrogen excreted in faeces not from ingested nitrogen)
$N_{e(u)}$ = (nitrogen excreted in urine whilst on the test diet) - (nitrogen excreted in urine not from ingested nitrogen)
Note :
$N_r = N_i - N_{e(f)} - N_{e(u)}$
$N_a = N_i - N_{e(f)}$
This can take any value from 0 to 100, though reported BV could be out of this range if the estimates of nitrogen excretion from non-ingested sources are inaccurate, such as could happen if the endogenous secretion changes with protein intake. A BV of 100% indicates complete utilization of a dietary protein, i.e., 100% of the protein ingested and absorbed is incorporated into proteins into the body. The value of 100% is an absolute maximum, no more than 100% of the protein ingested can be utilized (in the equation above $N_{e(u)}$ and $N_{e(f)}$ cannot go negative, setting 100% as the maximum BV).

Yorum

Çalışmada alınan ve yararlanılan proteinleri oranlamaktadırlar.
Gıda nitrojeni ile gıdadan gelmeyen nitrojeni de karşılaştırmaktadırlar.

Test ve bireyde alınan protein oranlamaktadırlar (Relatif kullanım). Temel alınan protein yumurta olmaktadır.

Relative utilization
Due to experimental limitations BV is often measured *relative* to an easily utilizable protein. Normally egg protein is assumed to be the most readily utilizable protein and given a BV of 100. For example:
Two tests of BV are carried out on the same person: one with the test protein source and one with a reference protein (egg protein).
relative BV = $(BV_{(test)} / BV_{(egg)}) * 100$
Where:
$BV_{(test)}$ = percentage BV of the test diet for that individual
$BV_{(egg)}$ = percentage BV of the reference (egg) diet for that individual
This is not restricted to values of less than 100. The percentage BV of egg protein is only 93.7% which allows other proteins with true percentage BV between 93.7% and 100% to take a relative BV of over 100. For example, whey protein takes a relative BV of 104, while its percentage BV is under 100%.
The principal advantage of measuring BV relative to another protein diet is accuracy; it helps account for some of the metabolic variability between individuals. In a simplistic sense the egg diet is testing the maximum efficiency the individual can take up protein, the BV is then provided as a percentage taking this as the maximum.
Conversion
Providing it is known which protein measurements were made relative to it is simple to convert from relative BV to percentage BV:
$BV_{(relative)} = (BV_{(percentage)} / BV_{(reference)}) * 100$
$BV_{(percentage)} = (BV_{(relative)} / 100) * BV_{(reference)}$
Where:
$BV_{(relative)}$ = relative BV of the test protein
$BV_{(reference)}$ = percentage BV of reference protein (typically egg: 93.7%).
$BV_{(percentage)}$ = percentage BV of the test protein
While this conversion is simple it is not strictly valid due to the differences between the experimental methods. It is, however, suitable for use as a guideline.
Factors that affect BV
The determination of BV is carefully designed to accurately measure some aspects of protein usage whilst eliminating variation from other aspects. When using the test (or considering BV values) care must be taken to ensure the variable of interest is quantified by BV. Factors which affect BV can be grouped into properties of the protein source and properties of the species or individual consuming the protein.

Yorum

Çalışmada, whey proteininin %104 olması, proteinin sıvıda olması ile, yoğurt suda bulunan ve kazein dışı protein olması açısından önemlidir.
Burada gıda kapsamının öne çıkarmaktadır.

Properties of the protein source
Three major properties of a protein source affect its BV:

- Amino acid composition, and the limiting amino acid, which is usually lysine
- Preparation (cooking)
- Vitamin and mineral content

Amino acid composition is the principal effect. All proteins are made up of combinations of the 21 biological amino acids. Some of these can be synthesised or converted in the body, whereas others cannot and must be ingested in the diet. These are known as essential amino acids (EAAs), of which there are 9 in humans. The number of EAAs varies according to species (see below).
EAAs missing from the diet prevent the synthesis of proteins that require them. If a protein source is missing critical EAAs, then its biological value will be low as the missing EAAs form a bottleneck in protein synthesis. For example, if a hypothetical muscle protein requires phenylalanine (an essential amino acid), then this must be provided in the diet for the muscle protein to be produced. If the current protein source in the diet has no phenylalanine in it the muscle protein cannot be produced, giving a low usability and BV of the protein source. In a related way if amino acids are missing from the protein source which are particularly slow or energy consuming to synthesise this can result in a low BV.
Methods of food preparation also affect the availability of amino acids in a food source. Some of food preparation may damage or destroy some EAAs, reducing the BV of the protein source.
Many vitamins and minerals are vital for the correct function of cells in the test organism. If critical minerals or vitamins are missing from the protein source this can result in a massively lowered BV. Many BV tests artificially add vitamins and minerals (for example in yeast extract) to prevent this.

Yorum

Protein kaynağının 3 temel özelliği vardır. 1) Besindeki aminoasit kompozisyonu, bitkilerde bu çok düşüktür, 2) Pişirme ile besinin hazırlanma boyutu, 3) Bu sırada vitamin ve mineraldeki değişiklikler.
Kısaca kaba değil, ağızdan giren farklı olabilmektedir.

Properties of the test species or individual
Under test conditions
In everyday life
Factors with no effect

Yorum

Test, her seferinde insanlarda da farklı olarak ele alınmalıdır. Emzirmede anne sütünün bekletilerek verilmesi, derin dondurucudan çıkarılarak verilmesi arasında farklar vardır.
En sık rastlanan verilme sırasındaki kayıplardır.

Advantages and disadvantages
BV provides a good measure of the usability of proteins in a diet and also plays a valuable role in detection of some metabolic diseases. BV is, however, a scientific variable determined under very strict and unnatural conditions. It is not a test designed to evaluate the usability of proteins whilst an organism is in everyday life — indeed the BV of a diet will vary greatly depending on age, weight, health, sex, recent diet, current metabolism, etc. of the organism. In addition, BV of the same food significantly varies species to species. Given these limitations BV is still relevant to everyday diet to some extent. No matter the individual or their conditions a protein source with high BV, such as egg, will always be more easily used than a protein source with low BV.
In comparison to other methods known
There are many other major methods of determining how readily used a protein is, including:

- Net protein Utilization (NPU)
- Protein Efficiency Ratio (PER)
- Nitrogen Balance (NB)
- Protein digestibility (PD)
- Protein Digestibility Corrected Amino Acid Score (PDCAAS)

These all hold specific advantages and disadvantages over BV,[7] although in the past BV has been held in high regard.[8][9]
In animals
The Biological Value method is also used for analysis in animals such as cattle, poultry, and various laboratory animals such as rats. It was used by the poultry industry to determine which mixtures of feed were utilized most efficiently by developing chicken. Although the process remains the same, the biological values of particular proteins in humans differs from their biological values in animals due to physiological variations.[10]
Typical values
Common foodstuffs and their values: (Note: this scale uses 100 as 100% of the nitrogen incorporated.)

- Whey Protein: 96 [11]
- Whole Soybean: 96 [12]
- Human milk: 95[13]
- Chicken egg: 94[13]
- Soybean milk: 91[12]
- Buckwheat: 90+[14]
- Cow milk: 90[13]
- Cheese: 84[15]
- Quinoa: 83[16]
- Rice: 83[15]
- Defatted soy flour: 81[12]
- Fish: 76[17]
- Beef: 92[17]
- Immature bean: 65[12]
- Full-fat soy flour: 64[12]
- Soybean curd (tofu): 64[12]
- Whole wheat: 64[17]
- White flour: 41[12]

Common foodstuffs and their values:[18] (Note: These values use "whole egg" as a value of 100, so foodstuffs that provide even more nitrogen than whole eggs, can have a value of more than 100. 100, does not mean that 100% of the nitrogen in the food is incorporated into the body, and not excreted, as in other charts.)

- Whey protein concentrate: 104
- Whole egg: 100
- Cow milk: 91
- Beef: 80
- Casein: 77
- Soy: 74[19]
- Wheat gluten: 64

By combining different foods, it is possible to maximize the score, because the different components favor each other:

- 85 % rice and 15 % yeast: 118[20]
- 55 % soy and 45 % rice: 111[20]
- 55 % potatoes and 45 % soy: 103[20]
- 52 % beans and 48 % corn: 101[20]

Yorum

Nitrojen temelinde farklı ölçümlerde olmaktadır. Bir gıdadaki boyutlar açısından önemlidir. Kanımca Biyolojik Değerlilik (BV) öne çıkmaktadır.
Besinlerin karma olması ile, örneğin, yumurtalı makarna ile, kıyma ve yoğurt katılması, üstüne salça ve yağ konması besleyiciliği açısından öne çıkmaktadır. Ancak, fazla kaçırılmamalıdır.

Anne sütünün %95 olarak ölçülmesi, farklı açıdan ele alınmalıdır. Bir bağırsakta dışkı da olmalıdır, bu açıdan %5 oranında bir bağırsağın çalışması, flora oluşması anlamındadır. Flora inek sütünde açık sarı dışkı iken, anne sütünde koyu sarı ve yeşil renk olabilmektedir. Bu açıdan da diğerlerine göre fayda katlanmaktadır.

Criticism
Since the method measures only the amount that is retained in the body critics have pointed out what they perceive as a weakness of the biological value methodology.[21] Critics have pointed to research that indicates that because whey protein isolate is digested so quickly it may in fact enter the bloodstream and be converted into carbohydrates through a process called gluconeogenesis much more rapidly than was previously thought possible, so while amino acid concentrations increased with whey it was discovered that oxidation rates also increased and a steady-state metabolism, a process where there is no change in overall protein balance, is created.[22] They claim that when the human body consumes whey protein it is absorbed so rapidly that most of it is sent to the liver for oxidation. Hence they believe the reason so much is retained is that it is used for energy production, not protein synthesis. This would bring into question whether the method defines which proteins are more biologically utilizable.
A further critique published in the *Journal of Sports Science and Medicine* states that the BV of a protein does not take into consideration several key factors that influence the digestion and interaction of protein with other foods before absorption, and that it only measures a protein's maximal potential quality and not its estimate at requirement levels.[23] Also, the study by Poullain et al., which is often cited to demonstrate the superiority of whey protein hydrolysate by marketers, measured nitrogen balance in rats after three days of starvation, which corresponds to a longer period in humans.[24] The study found that whey protein hydrolysate led to better nitrogen retention and growth than the other proteins studied. However the study's flaw is in the BV method used, as starvation affects how well the body will store incoming protein (as does a very high caloric intake), leading to falsely elevated BV measures.[25]
So, the BV of a protein is related to the amount of protein given. BV is measured at levels below the maintenance level. This means that as protein intake goes up, the BV of that protein goes down. For example, milk protein shows a BV near 100 at intakes of 0.2 g/kg. As protein intake increases to roughly maintenance levels, 0.5 g/kg, BV drops to around 70.[25] Pellet et al., concluded that "biological measures of protein quality conducted at suboptimal levels in either experimental animals or human subjects may overestimate protein value at maintenance levels." As a result, while BV may be important for rating proteins where intake is below requirements, it has little born on individuals with protein intakes far above requirements.
This flaw is supported by the FAO/WHO/UNU, who state that BV and NPU are measured when the protein content of the diet is clearly below that of requirement, deliberately done to maximize existing differences in quality as inadequate energy intake lowers the efficiency of protein utilization and in most N, balance studies, calorie adequacy is ensured. And because no population derives all of its protein exclusively from a single food, the determination of BV of a single protein is of limited use for application to human protein requirements.[26]
Another limitation of the use of Biological Value as a measure of protein quality is that proteins which are completely devoid of one essential amino acid (EAA) can still have a BV of up to 40. This is because of the ability of organisms to conserve and recycle EAAs as an adaptation of inadequate intake of the amino acid.[27]
Lastly, the use of rats for the determination of protein quality is not ideal. Rats differ from humans in requirements of essential amino acids. This has led to a general criticism that experiments on rat's lead to an over-estimation of the BV of high-quality proteins to man because human requirements of essential amino acids are much lower than those for rats (as rats grow at a much faster rate than humans). Also, because of their fur, rats are assumed to have relatively high requirements of sulphur-containing amino acids (methionine and cysteine).
As a result, the analytical method that is universally recognized by the Food and Agriculture Organizationx (FAO), World Health Organization (WHO), the U.S. Food and Drug Administration (FDA), the United States Department of Agriculture (USDA), United Nations University (UNU) and the United States National Academy of Sciences when judging the quality of protein in the human is not PER or BV but the Protein Digestibility Corrected Amino Acid Score (PDCAAS), as it is viewed as accurately measuring the correct relative nutritional value of animal and vegetable sources of protein in the diet.[28][29]

Yorum

Proteinin yapıma gitmesi için, enerji, kalori gereklidir.
Bunun yanında, sporcuların da dahil protein ve kalorili sıvı besinler almaları, tam fayda sağlamamaktadır.

Birçok besin boyutu, Neonatoloji açısından önemlidir, bebeğe verilmez ama anneye verilen besinler açısından öne çıkmaktadır. Besin kapsamı olarak, vitamin ve mineral desteği, gebelikte ve daha sonra da emzireme de sürdürülmelidir. Fazla yemek değil, yeterli ve dengeli olmalı, şişmanlık faydalı olamaz.

Beslenmenin Biyokimyasal Temelleri (mustafaaltinisik.org.uk)[13]

Besinlerin hazırlanış şekli Isıtma suretiyle besinler mikroplardan arıtılır, bitkisel besinlerdeki selüloz kılıf çatlar ve sindirilebilecek substratlar dışarı çıkar.
Nişasta ve proteinlerin denatürasyon sonucu olarak sindirilmeleri kolaylaşır.
Ancak vitaminler kaynatma suyuna geçer ve oksijen varlığında %30 kadarı kayba uğrar.
Proteinlerin biyolojik değeri de esansiyel amino asitlerin yüksek sıcaklıkta kalmasıyla kayba uğrar.
Yararlanma değeri Yararlanma değeri hayvansal besinlerde %95 ve bitkisel besinlerde %70-85 arasındadır.
Besin maddeleri için günlük gereksinim Orta düzeyde vücut aktivitesi gösteren 11-35 yaş grubundaki insanlarda günlük besin madde ihtiyacı şöyledir:
Besin maddesi Kaynak 70 kg erkek veya 2900 kcal/gün için 55 kg kadın veya 2100 kcal/gün için
1) Enerji substratı -Karbonhidrat -Protein -Yağ Normal beslenme 480 g 70 g 70 g 330 g 55 g 55 g
2) Yapı substratı -Esansiyel amino asit -Esansiyel yağ -Kalsiyum -Fosfat Hayvansal proteinler Çeşitli yağlar 10-20 g 6-8 g 0,8 g 3,7 g 8-17 g 5-7 g 0,8 g 3,7 g
Besin maddesi Kaynak 70 kg erkek veya 2900 kcal/gün için 55 kg kadın veya 2100 kcal/gün için
3) Etki substratı + Mineraller- Na Normal beslenme 2,0 g 2,0 g 7 - K- Mg - Cl + İz elementler- Mn - Zn- Fe - Cu - İyot +Vitaminler - A - D - B1 - B2 - B6 - B12 - C Sarı sebze, meyve Balık Karaciğer, buğday Karaciğer, süt Karaciğer, maya Karaciğer,süt,yumurta Yeşil sebze, meyve

2,0 g 0,3 g 6,0 g 4 mg 15 mg 10 mg 1,5 mg 0,15 mg 1,6 mg 1,01 mg 1,5 mg 1,8 mg 2,0 mg 0,005 mg 75 mg 2,0 g 0,3 g 6,0 g 4 mg 1 5 mg 10 mg 1,5 mg 0,15 mg 1,6 mg 1,01 mg 1,5 mg 1,8 mg 2,0 mg 0,005 mg 75 m

Yorum

Beslenme her bireye göre, her ortam ve duruma göre ayrıcalıklıdır ve zaman sürecine göre de değişir.
Nitekim sabah kahvaltı, öğle ve akşam yemekleri farklı olmalı, içerik ve kapsam olarak ayrılmalıdır. 3 ana besin yanında 2-3 atıştırmalık ile tamamlanmalıdır.

Sonuç

Bir bankada veznedar, devamlı para sayar, alır, kasaya koyar, çıkarır ve insanlara verir.
Bu paraların hiçbirine sahip olmadığı gibi, akşam sayımda eksiklik olursa öder.
Elinde para olması, bankada kendi paran olması değil, bunu değere yansıtmayan, nimete dönüştürmeyen, sadece kendisi değil, yakınlarından toplum ile paylaşmayan için ise bir anlamı olmaz.
Ispanak yiyerek güçlü olacağını sanan, İkinci Dünya Savaşında ıspanağın bahçe dahil her yere ektiren Japon Devleti gibi, bazı algıların bilimsel olmaması durumunda anlamsız çaba olmaktadır.

Besin hazırlanırken, birçok özelliğini kaybetmektedir, buna karşın da sindirimi daha kolaylaşmaktadır. Özet olarak zararlı olmayacak yaklaşımdır, emzirme ise, doğrudan alındığı için besin hazırlama değil, meme hazırlanması, annenin emzirmeye hazırlanması, besin moral, rıza olarak hazırlanması önemlidir.

Bu açıdan verilenden öte, bunun sindirilmesi ve belirli boyuta getirilmesidir, ki besinler içinde sadece gıda olarak ele alsak bile en önemlisi anne sütü, emzirme, hayvanlar için de annelerinin sütü, diğerleri için yumurta olmaktadır.

Yemek bir tatmin, bir zevk ve bir yaşamın, var olmanın bir nimeti, bir algılaması olduğu için, bunun bu şekilde gelişmesi, ilerlemesi ve duygusal ve sosyal boyutu ile birlikte oluşmalıdır. Bireyin doyumluluğu, elbet yediğinin faydalı olmasıdır.

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