

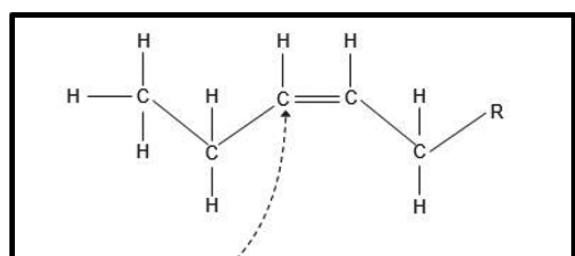
Bölüm 7

BESLENMEDE n-3 ÇOKLU DOYMAŞ YAĞ ASİTLERİNİN ÖNEMİ

Z. BAYRAKTUTAN¹

İnsanın sağlıklı bir yaşam sürebilmesi için düzenli, yeterli ve sağlıklı bir beslenme davranışları içerisinde olması gerekmektedir. Bir kişinin iyi bir beslenme davranışından bahsedebilmemiz için aldığı besinlerin karbohidrat, yağ, protein içeriği ve alınan besinlerin miktarları belli bir denge içerisinde olmalıdır. Dengeli bir beslenmede alınan yağların miktarı kadar içeriği de çok önem arzettmektedir. Burada özellikle diet'te n-3 çoklu doymamış yağ asitlerinin önemi üzerinde durulacaktır. Aşağıdaki tabloda gösterilen yağlar diyetin içeriğine göre değişik miktarlarda vücutta alınacaktır.

Tabloda ilk sırada yer alan omega-3 yağ asitlerinin genel formülü Şekil 1'de gösterilmiştir.



Metil ucundan 3.karbon atomu

Şekil 1. Omega-3 yağ asitlerinin genel gösterimi

Tablo 1. Diyetle alınan yağlar, kaynakları ve etkileri

Diyet Yağları	Bulunduğu Besinler	Faydaları Ve Zararları
Omega-3 Yağ asidleri	Balık, ceviz, soya fasulyesi	Antiinflamatuar etki, serum trigliseridlerini düşürücü etki
Tekli doymamış yağlar	Zeytin yağı	Aterojenezi azaltır
Çoklu doymamış yağlar	Sebze yağları	Antiinflamatuar etki
Doymuş yağlar	Doğal beslenen hayvan etleri, süt ve süt ürünleri	Spesifik genetik yatkınlığı olanlarda aterojeneze yatkınlık sağlar
Trans yağlar (Kısmen hidrojenize yağlar)	Sentetik, sadece işlenmiş gıdalarda bulunur	Aterosklerozis, nonalkolik yağlı karaciğer hastalığı
ω-6 yağ asitleri	Mısır ve soya ile beslenen çiftlik hayvanları ve balıklar	Proinflamatuar, aterosklerozis,immün disfonksiyon, insülin rezistansı

¹ Dr. Öğr. Üyesi, Atatürk Üniversitesi Tıp Fakültesi Tibbi Biyokimya AD, drzbayraktutan@gmail.com

oprotektif özellikleri, beyin gelişimindeki faydalıları gözönüne alındığında diyette mutlaka olması gereken moleküllerdir. Dolayısıyla yeterli ve belli aralıklarda düzenli olarak diyetin n-3 PUFA'larla takviye edilmesi gerekmektedir.

KAYNAKLAR

- Jacobsen C, Nielsen NS, Horn AF, Sorensen ADM. (2013) Food enrichment with omega-3 fatty acids. USA Woodhead Publishing Limited.
- Hedge MV, Zanwar AA, Adekar SP. Omega-3 Fatty acids. (2016) Switzerland Springer.
- Sheikh O, Vande Hei AG, Battisha A et al. Cardiovascular, electrophysiologic, and hematologic effects of omega-3 fatty acids beyond reducing hypertriglyceridemia: as it pertains to the recently published REDUCE-IT trial. *Cardiovascular diabetology*. 2019;18(1):84.
- Hirako S, Kim H, Arai T et al. Effect of concomitantly used fish oil and cholesterol on lipid metabolism. *The Journal of nutritional biochemistry*. 2010;21(7):573-9.
- Flachs P, Rossmeisl M, Bryhn M et al. Cellular and molecular effects of n-3 polyunsaturated fatty acids on adipose tissue biology and metabolism. *Clinical science (London, England : 1979)*. 2009;116(1):1-16.
- Jacobson TA. Role of n-3 fatty acids in the treatment of hypertriglyceridemia and cardiovascular disease. *The American journal of clinical nutrition*. 2008;87(6):1981s-90s.
- Davidson MH, Maki KC, Bays H et al. Effects of prescription omega-3-acid ethyl esters on lipoprotein particle concentrations, apolipoproteins AI and CIII, and lipoprotein-associated phospholipase A(2) mass in statin-treated subjects with hypertriglyceridemia. *Journal of clinical lipidology*. 2009;3(5):332-40.
- Bobik A. Apolipoprotein CIII and atherosclerosis: beyond effects on lipid metabolism. *Circulation*. 2008;118(7):702-4.
- Maeda N, Li H, Lee D et al. Targeted disruption of the apolipoprotein C-III gene in mice results in hypotriglyceridemia and protection from postprandial hypertriglyceridemia. *The Journal of biological chemistry*. 1994;269(38):23610-6.
- Ohnishi H, Saito Y. Eicosapentaenoic acid (EPA) reduces cardiovascular events: relationship with the EPA/arachidonic acid ratio. *Journal of atherosclerosis and thrombosis*. 2013;20(12):861-77.
- Zehr KR, Walker MK. Omega-3 polyunsaturated fatty acids improve endothelial function in humans at risk for atherosclerosis: A review. *Prostaglandins & other lipid mediators*. 2018;134:131-40.
- Kuszewski JC, Wong RHX, Howe PRC. Effects of Long-Chain Omega-3 Polyunsaturated Fatty Acids on Endothelial Vasodilator Function and Cognition-Are They Interrelated? *Nutrients*. 2017;9(5).
- Burdge G. Polyunsaturated Fatty Acid Metabolism: USA Elsevier; 2018.
- Wiktorowska-Owczarek A, Berezinska M, Nowak JZ. PUFAs: Structures, Metabolism and Functions. *Advances in clinical and experimental medicine : official organ Wroclaw Medical University*. 2015;24(6):931-41.
- Liu R, Li Z, Wang Q. Resolvin D1 Attenuates Myocardial Infarction in a Rodent Model with the Participation of the HMGB1 Pathway. *Cardiovascular drugs and therapy*. 2019.
- Yaribeygi H, Atkin SL, Simental-Mendia LE et al. Anti-inflammatory effects of resolvins in diabetic nephropathy: Mechanistic pathways. *Journal of cellular physiology*. 2019.
- Bazan NG. Omega-3 fatty acids, pro-inflammatory signaling and neuroprotection. *Current opinion in clinical nutrition and metabolic care*. 2007;10(2):136-41.
- Serhan CN. Pro-resolving lipid mediators are leads for resolution physiology. *Nature*. 2014;510(7503):92-101.
- Dalli J, Serhan C. Macrophage Proresolving Mediators-the When and Where. *Microbiology spectrum*. 2016;4(3).
- Hansen TV, Vik A, Serhan CN. The Protectin Family of Specialized Pro-resolving Mediators: Potent Immunoresolvents Enabling Innovative Approaches to Target Obesity and Diabetes. *Frontiers in pharmacology*. 2018;9:1582.
- Serhan CN, Chiang N, Van Dyke TE. Resolving inflammation: dual anti-inflammatory and pro-resolution lipid mediators. *Nature reviews Immunology*. 2008;8(5):349-61.
- Serhan CN, Hong S, Gronert K et al. Resolvins: a family of bioactive products of omega-3 fatty acid transformation circuits initiated by aspirin treatment that counter proinflammation signals. *The Journal of experimental medicine*. 2002;196(8):1025-37.
- Karakula-Juchnowicz H, Rog J, Juchnowicz D et al. GPR120: Mechanism of action, role and potential for medical applications. *Postepy higieny i medycyny doswiadczałnej (Online)*. 2017;71(0):942-53.
- Milligan GK, I. Free Fatty Acid Receptors. Switzerland: Springer; 2017.
- Im DS. FFA4 (GPR120) as a fatty acid sensor involved in appetite control, insulin sensitivity and inflammation regulation. *Molecular aspects of medicine*. 2018;64:92-108.
- Wannick M, Bezdek S, Guillen N et al. Oral administration of the selective GPR120/FFA4 agonist compound A is not effective in alleviating tissue inflammation in mouse models of prototypical autoimmune diseases. *Pharmacology research & perspectives*. 2018;6(6):e00438.
- Vallee Marcotte B, Cormier H, Rudkowska I et al. Polymorphisms in FFAR4 (GPR120) Gene Modulate Insulin Levels and Sensitivity after Fish Oil Supplementation. *Journal of personalized medicine*. 2017;7(4).
- Oh DY, Talukdar S, Bae EJ et al. GPR120 is an omega-3 fatty acid receptor mediating potent anti-inflammatory and insulin-sensitizing effects. *Cell*. 2010;142(5):687-98.
- Calder PC. Omega-3 fatty acids and inflammatory processes: from molecules to man. *Biochemical Society transactions*. 2017;45(5):1105-15.
- Molfino A, Amabile MI, Monti M et al. Omega-3 Polyunsaturated Fatty Acids in Critical Illness: Anti-Inflam-

- matory, Proresolving, or Both? Oxidative medicine and cellular longevity. 2017;2017:5987082.
31. Chappus-McCendie H, Chevalier L, Roberge C et al. Omega-3 PUFA metabolism and brain modifications during aging. Progress in neuro-psychopharmacology & biological psychiatry. 2019;94:109662.
32. Saini RK, Keum YS. Omega-3 and omega-6 polyunsaturated fatty acids: Dietary sources, metabolism, and significance - A review. Life sciences. 2018;203:255-67.
33. Watson RDM, F. Omega-3 fatty acids in brain and neurological health.: USA Elsevier.; 2014.
34. de Mello AH, Uberti MF, de Farias BX et al. n-3 PUFA and obesity: from peripheral tissues to the central nervous system. The British journal of nutrition. 2018;119(11):1312-23.