# BÖLÜM 41

# ANTİOKSİDAN VİTAMİNLER

Said ALTIKAT [1]

## OKSİDATİF STRES VE OKSİDANLAR

Şu anda "oksidanlar ile antioksidanlar arasında, oksidanların tarafına kayan bir dengesizlik ve ayrıca redoks sinyal mekanizmalarında bir bozukluk ve kontrol kaybına yol açan bir dengesizlik ile moleküler hasar " olarak tanımlanan Oksidatif stres; önceleri "prooksidan/antioksidan oranında pay oranında artışla ilgili bir metabolik araz olarak yani, prooksidanların artışıyla karekterize bir bozukluk" olarak ifade edilmişti. (1,2)

Oksidatif stres; biyolojik sistemlerdeki iç mekanizmalarda etkenlere karşı koyma kapasitesinin azalmasıyla ilgili olarak bol miktarda reaktif oksijen türlerinin (ROS) üretiminden kaynaklanır. Yüksek miktarlarda biyolojik yapıları sisitemleri ve molekülleri etkileyen tahrip gücü çok fazla olan ve bilindik birçok hastalığın kaynağı olarak tarif edilen Reaktif oksijen türleri, bir veya birden çok eşleşmeyen elektrona sahip serbest radikal moleküllerini ifade eder. Pek çok hastalık ve patolojik süreçlerde serbest radikallerin sebep olduğu Oksidatif sitres etmen olarak gösterilmiştir. Süperoksit anyonu radikali ($O_2^{\bullet-}$), nitrik oksit radikali (•NO), hidrojen peroksittir ($H_2O_2$) ve hidroksil radikali (•OH), üzerinde en fazla çalışılan ve olumsuz etkileri en çok bilinen esas reaktif oksijen türleridir. (3,4)

Oksidatif stres, birçok hastalık sürecinde ortak noktayı göstermesi bakımından önemlidir. ROS üretimi ile vücuttaki antioksidan savunma sistemleri arasında bir dengesizlik varsa bu durum bize, sisteme aşırı yüklenildiği gösterir.(5) ROS, biyolojik hücrelerde enzimatik ve nonenzimatik oluşturulan ve doğrudan veya çeşitli sinyal yolaklarında ara ürünler olarak çıkan ve hücresel hasarlanmalara neden olan oldukça reaktif türlerin bir bütünü olarak karşımıza çıkar. Metabolik yolaklarda, oksijen molekülü, önce süperoksit sonra hidrojen peroksit daha sonra ise ve hidroksil radikallerine dönüşerek ilerler. Oksijenden su üretimi ETZ de enzimatik bir işlemdir. ROS türlerin üretimi sonucunda hücre zarı yapısında bazı enzim aktivasyonu sonucu lipidhidroperoksit molekülleri oluşur. Buradaki enzimler metaloenzimler olup bazı iyonları içerir.

Substrat konsantrasyonu arttığında ayrışırlar ve özellikle demir olmak üzere metal iyonları

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