Bölüm 6

HPLC İLE ANTİOKSİDAN AKTİVİTE TAYİN YÖNTEMLERİ

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GİRİŞ

Serbest radikaller, dış orbitallerinde bir veya daha fazla eşlenmemiş elektrona sahip oldukları için kararsız atomlar veya moleküllerdir. Bu nedenle, kararlı hale gelmek için diğer moleküllerle reaksiyona girme eğilimindedirler. Serbest radikallerin büyük bir kısmı oksijen kaynaklıdır [1,2]. Aerobik organizmalar için hayati öneme sahip olan oksijen, kontrollü koşullarda genellikle metabolik bir amaca hizmet ederken, bazen normal şartlar altında elektron taşıma zincirinden sızar ve moleküler oksijen ile birleşerek reaktif oksijen türlerini (ROT) oluşturur [3-6]. ROT yüksek derecede reaktif moleküller olup lipitler, proteinler veya DNA gibi hücresel moleküller ile reaksiyona girebilir ve onlara zarar verebilir [7,8]. Biyolojik olarak önemli olan ROT'lar, süperoksit anyonu ($O_2^{-}\bullet$), tekli oksijen ($^1O_2$), hidrojen peroksit (H_2O_2), hidroksil radikali (•OH), hipokloröz asit (HOCl), peroksinitrit ($ONOO^-$) radikallerini içerir [8-11]. ROT'lar, hücrede çeşitli bölgelerde gerçekleşen biyokimyasal reaksiyonları etkileyerek hücresel hasara neden olabilir [7,12]. Bununla birlikte, çeşitli hastalıklar, alınan ilaçlar, hava kirliliği, radyasyon ve yetersiz beslenme gibi sayısız faktörler ROS üretimini olumsuz yönde etkileyerek oksidatif strese yol açabilir [1, 13-15]. Oksidatif stres "oksidan oluşumu ile antioksidan onarım kapasitesi arasındaki dengesizlik" olarak tanımlanabilir [5]. Oksidatif stres kanser, ateroskleroz, Alzheimer, Parkinson, astım, romatoid artrit, inflamasyon gibi çeşitli hastalıklara yol açan ciddi hücre hasarına neden olur [1, 16-19]. Ayrıca, ROT nedeniyle oluşan hasar hücrede yaşlanma sürecini de hızlandırmaktadır. Bu süreci yavaşlatmak, oksidasyonu önlemek ve olumsuz etkilerinden korunmak için hücre antioksidan olarak adlandırılan molekülleri kullanır [20-21]. Doğal antioksidanların önemi temel olarak sağlığı geliştirici özellikleri ile ilgilidir. Antioksidanlar, serbest radikallerin saldırısına bağlı patolojilere karşı organizmanın savunma mekanizmalarından sorumludur. Bu nedenle, antioksidanların alımı, kanser, Parkinson, Alzheimer, ateroskleroz gibi oksidatif stresin neden olduğu dejeneratif hastalıkların önlenmesinde rol oynar [19, 22-24].

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