

## Bölüm 4

# DENTİN REJENERASYONU SAĞLAYAN MATERYALLERİN İNCELENMESİ

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### GİRİŞ

Endodontik ve restoratif tedavilerde kullanılan materyallere alternatif olarak son dönemde birçok materyal, diş hekimliği uygulamaları için kullanıma sunulmuştur. Bu materyaller posterior dişlerin restorasyonunda, pulpa kuafajı gibi uygulamalarda kullanılmıştır. Yapılan birçok in vivo ve in vitro çalışmada materyallerin tersiyer dentin yapımını indüklediği, biyoaktif ve biyouyumlu olduğu saptanmıştır.

Vital pulpanın tamir edilebilmesi için kullanılacak materyallerin pulpa kök hücrelerini uyarması, bu hücrelerin iyileşme potansiyellerinin artırılması ve dentin formasyonunun hızlandırılması için odontoblastlara diferansiyasyonlarını indüklemelidir. Bu amaçla çeşitli biyolojik ve biyolojik olmayan materyaller araştırılmaktadır.

Bu derleme materyallerin bileşimini, dentinogenezise katkısını literatürde yer alan bilgiler ışığında sunmayı amaçlamaktadır.

### DENTİN STİMÜLE ETMEDE KULLANILAN MATERYALLER

Dentinogenez, kranial nöral krest kaynaklı hücrelerin odontoblastlara farklılaşmasının ardından pre-dentin ve dentin salgılanmasını içerir. Diş gelişiminin geç evrelerinde, odontoblastlar, iç mine epitelinin etkisi altında dental papillanın ektomezenşim hücrelerinden farklılaşır (Nino-Barrera & ark 2013).

Onarıcı ve / veya rejeneratif dentin için yeni strateji, ilk olarak pulpa dokusunun bu doğal iyileşme potansiyelini geliştirmek, ikincisi, biyomühendislik ile odontoblastları ve dentin matrisini ex vivo çalışmalarla gelişmesini destekleyici materyalleri üretmek ve dokuyu implante etmektir. Tedavinin nihai amacı, pulpa

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onarıcı dentin, pulpa canlılığını korumak için, yoğun hasar görmüş dokunun hemen altında bir mineralize doku köprüsü sağlar(Nowicka, 2013).

Büyüme faktörlerinin reparatif dentin formasyonu indüklenmesi amacıyla topikal olarak uygulamalarında, yarılanma ömrünün sınırlı olması,yüksek protein konsantrasyonlarının yol açtığı oldukça yüksek maliyetler bu faktörlerin protein formlarıyla kullanılmalarında önemli engeller olarak karşımıza çıkmaktadır(M. Nakashima, 2005).

Kalsiyum hidroksit standart olarak kabul edilse de çözünürlüğü nedeniyle sızıntıya ve sekonder inflamasyona yol açabileceği görülmüştür(Gudkina, 2012).

Biyoaktif ve biyouyumlu bir materyal olan MTA yüksek sızdırmazlık sağlar ve son yıllarda kalsiyum hidroksite alternatif olarak kuafaj tedavilerinde sert doku oluşumu indüklediği görülmektedir. Ancak uzun sertleşme süresi, manipülasyonunun zor olması, iki seans gerektirmesi ve yüksek maliyeti kullanımını sınırlamaktadır. Biodentine MTA'ya göre daha hızlı sertleşir, manipülasyonu daha kolaydır ve tek seansta tedaviye olanak tanır(Nayak & Hasan, 2014).

Antibiyotiklerin ise sert dokuyu oluşturabilmesi için öncelikle pulpada stabil kan pıhtısı oluşturması gerekir. Çünkü bu pıhtının içinde hücrelerin odontoblastlara farklılaşmasını uyaracak ve hücre büyümesini sağlayacak faktörler görev yapar(Kaida & ark, 2008).

Doku mühendisliği ışığında rejenerasyon sağlayan veya propolis, mine matris proteini gibi kuafaj tedavisinde kullanılacak materyallerin günümüze dek yapılan çalışmalarda, geliştirilen yeni yöntemlere bakıldığında; miktarı, tedavinin kaç aşamalı olacağı, rejenerasyon gözlenebilmesi için ideal zaman aralığı, kullanılacak ideal materyal gibi pek çok konuda daha ileri çalışmalar yapılması gerekmektedir.

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