BÖLÜM 4

Nanobaloncuklar

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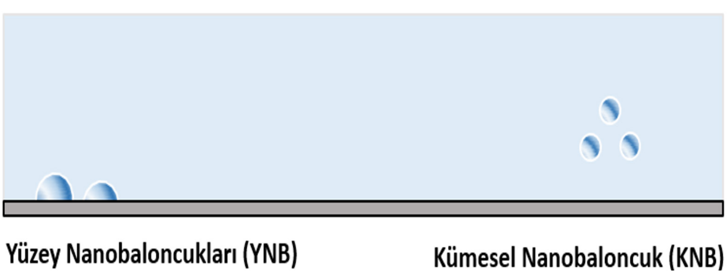
GİRİŞ

Nanobaloncuklar, sıvı içindeki gazla dolu nano boyutlu parçacıklardır. Katı/sıvı arayüzündeki veya çözeltideki konumlarına göre sırasıyla yüzey nanobaloncukları (YNB) ve küme nanobaloncukları (KNB) olarak adlandırılırlar (1, 2) (Şekil 1). Küme nanobaloncukları, 1 µm'den küçük boyutlara sahip küresel baloncuklar içeren yoğuşmayan gazlardır. Ayrıca bu baloncuklar ISO uluslararası standartlarına (ISO 20480-1:2017) göre ultra ince baloncuklar (UİB'ler) olarak da tanımlanırlar. Yüzey nanobaloncukları, küresel bir kapak biçiminde olan bir yüzey üzerinde bulunan gaz dolu baloncuklardır. Yüzey nanobaloncukları, genellikle on nanometre yüksekliğinde ve yüzlerce nanometre genişliğindedir (genellikle 100 ile 500 nm) (3).



Şekil 1. *Yüzey ve küme nanobaloncukları*

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ultrasonun tümör ablasyonunda etkinliğini artırmak veya kan pıhtılarının tedavisinde trombolizde yardımcı olmak için kullanılabilir.

Nanobaloncuklar, çeşitli bilimsel disiplinlerde değerli araştırma araçları olarak hizmet eder. Akışkan dinamiği, akustik, malzeme bilimi ve yüzey olguları gibi alanları keşfeden çalışmalarda kullanılırlar. Bu baloncuklar, temel prensiplere ışık tutar, yeni teknolojilerin geliştirilmesine katkıda bulunur ve araştırmacıların mikro ve nano ölçekli fenomenleri incelemelerine olanak sağlar.

Mikro/Nanobaloncuklar, teşhis ve tedavi işlevlerini birleştiren teranostik yaklaşımların ortaya çıkmasına olanak sağlar. Görüntüleme yeteneklerini ve terapötik özelliklerini tek bir ajan içine entegre ederek, bu balonlar teşhislerin yapıldığı, tedavilerin uygulandığı ve tedavi yanıtlarının tek bir platform kullanılarak izlendiği kişiselleştirilmiş tıp yaklaşımlarını mümkün kılar.

Genel olarak, mikro/Nanobaloncuklar, tıbbi görüntüleme, hedefe yönelik ilaç taşımacılığı, terapötikler, araştırma ve yenilikçi teranostik yaklaşımların geliştirilmesinde önemli bir rol oynamaktadır. Benzersiz özellikleri ve çok yönlü uygulamaları, sağlık sonuçlarının iyileştirilmesine ve çeşitli bilimsel alanlardaki bilgimizin genişletilmesine değerli araçlar sunar. Gelecekte birçok açıdan geliştirilmeye açık teknolojileri bünyesinde barındırır.

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