



Effervescent Powders for Inhalation

ID# 2005011

HIGHLIGHTS

- Used to create an active-release inhalable delivery vehicle for poly(butylcyanoacrylate) (PBCA) nanoparticles.
- Toxicity study of carrier-PBCA nanoparticle formulation administered to mice by inhalation showed no negative effects.
- Most advanced product candidate based on this delivery system is an inhalable effervescent doxorubicin nanoparticle formulation; demonstrated significantly improved survival time in a small cell lung cancer mouse model.

OPPORTUNITY

The respiratory tract is an effective administration route for drug delivery to the lung as well as an emerging delivery option for systemic therapeutics. University of Alberta and Alberta Health Services researchers have jointly developed a new type of dry-powder inhalable carrier particle with an active release mechanism to disperse therapeutics more effectively. Particle size may be customized to target specific areas of the respiratory tract including the deep regions of the lung. Similar to the effervescent technology commonly used in oral drug formulations, the particles effervesce on contact with moisture to provide a localized burst release of drug.

This new carrier has been used to create an active-release inhalable delivery vehicle for PBCA nanoparticles. A 12-week toxicity study of the carrier-PBCA nanoparticle formulation administered to mice by inhalation showed no negative effects. The most advanced product candidate based on this delivery system is an inhalable effervescent doxorubicin nanoparticle formulation, which has demonstrated significantly improved survival time in a mouse model of small cell lung cancer.

COMPETITIVE ADVANTAGE

- Aerosol may reduce systemic side effects and increase effectiveness of doxorubicin for lung cancer.
- Spray-drying process is cost-effective and scalable.
- Carrier particles work with conventional dry powder inhalers; carrier ingredients approved for human use.

STATUS

- [Patent issued United States - US 2007/0031490 A1](#)

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MORE INFORMATION

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