Lipid-Free Emulsions for Delivering Anesthesia, Other Hydrophobic Drugs

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The Wisconsin Alumni Research Foundation (WARF) is seeking commercial partners interested in developing a method for formulating nanoemulsions that do not contain vegetable oil and are not susceptible to bacterial/fungal contamination.

Overview

Emulsions containing soybean oil have been used intravenously for more than 40 years. Recently they have been employed in the delivery of certain hydrophobic drugs such as anti-inflammatory agents and anesthetics like propofol (i.e., Diprivan).

Propofol is used extensively to induce and maintain general anesthesia as well as for sedation purposes. However, the oil used in the emulsion is highly susceptible to bacterial and fungal growth. To combat contamination, tubing and open vials of propofol must be replaced every 12 hours. The current formulation also may cause pain, lipid intolerance and other serious complications in some patients.

The Invention

UW–Madison researchers have developed non-lipid nanoemulsions for delivering propofol and other hydrophobic compounds. The formulations contain miniscule droplets of semifluorinated block copolymers and phospholipid surfactants, and are highly stable without the need for conventional lipid components like soybean oil.

The ingredients can be adjusted to (i) enhance stability, (ii) accelerate or slow drug release rates and (iii) increase shelf life.

Applications

- Nanoemulsions for formulating, delivering and releasing hydrophobic drugs including propofol

Key Benefits

- Lipid-free
- Solves the problem of bacterial/fungal contamination
- Highly versatile
- Supports controlled drug release
- Nanoemulsions are intrinsically more stable and absorbable *in vivo*.

Stage of Development

Additional Information

For More Information About the Inventors

- Sandro Mecozzi
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Tech Fields

- Drug Delivery : Other drug delivery technologies

For current licensing status, please contact Rafael Diaz at rdiaz@warf.org or 608-960-9847