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Paclitaxel Polymeric Micelle Formulation NANT-008

National Cancer Institute

Source

National Cancer Institute. *Paclitaxel Polymeric Micelle Formulation NANT-008*. NCI Thesaurus. Code C148531.

A nanoparticle-based formulation consisting of polymeric micelles encapsulating the taxane paclitaxel, with potential antineoplastic activity. Paclitaxel is covalently bound to polyethylene glycol (PEG)-based block copolymers which forms a micellar structure with an outer hydrophilic PEG shell surrounding the hydrophobic paclitaxel. Upon administration of the paclitaxel polymeric micelle formulation NANT-008, the nanoparticles are stable in the bloodstream and specifically accumulate in the tumor tissue. Due to the acidic conditions in the tumor and the pH-responsive nature of the micelles, paclitaxel is released in the tumor environment. Paclitaxel binds to microtubules, promotes microtubule assembly, and prevents depolymerization, thus interfering with normal mitosis. Compared to the administration of paclitaxel alone, this formulation increases the solubility of paclitaxel, enhances its specific retention in cancer tissue, and increases its therapeutic effect, while decreasing its toxicity. In addition, the micellar formulation allows the delivery of higher doses of paclitaxel to target tissues while minimizing systemic toxicity.