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Vandetanib-eluting Radiopaque Bead BTG-002814

National Cancer Institute

Source

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Radiopaque drug-eluting beads (DEBs) that are loaded with vandetanib, a dual inhibitor of both vascular endothelial growth factor receptor (VEGFR) and epidermal growth factor receptor (EGFR), with potential antineoplastic, anti-angiogenic and imaging activities. Upon intra-arterial hepatic artery administration of vandetanib (VTB)-eluting Radiopaque beads (VERBs) BTG-002814, the DEBs occlude the tumor blood vessels and deprive tumor cells of oxygen and nutrients, thereby causing hepatic arterial embolization and direct tumor cell death. The VERBs release vandetanib from the beads in a sustained manner. Vandetanib selectively inhibits the tyrosine kinase activity of both VEGFR and EGFR, thereby blocking both VEGF/VEGFR- and EGF/EGFR-stimulated signaling and inhibiting cell proliferation, migration and angiogenesis in VEGFR/EGFR-expressing hepatic tumor cells. The DEBs, controlled release microspherical devices, cause low systemic exposure and prevent systemic toxicity of vandetanib. DEBs also deliver high concentrations of vandetanib in the tumor for a controlled and extended period of time. Use of radiopaque DEBs allows for visualization of both the bead location and the degree of embolization upon imaging.