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# Nanoparticle Albumin-Bound Rapamycin

National Cancer Institute

## Source

National Cancer Institute. *Nanoparticle Albumin-Bound Rapamycin*. NCI Thesaurus. Code C74065.

The macrolide antibiotic rapamycin bound to nanoparticle albumin with immunosuppressant (see sirolimus) and potential antiangiogenic and antineoplastic activities. Rapamycin binds to the immunophilin FK Binding Protein-12 (FKBP-12) to generate a complex that binds to and inhibits the activation of the mammalian Target Of Rapamycin (mTOR), a key regulatory kinase. In turn, inhibition of mTOR may result in the inhibition of the phosphatidylinositol 3 (PI-3) kinase/Akt pathway and vascular endothelial cell growth factor (VEGF) secretion, which may result in decreased tumor cell proliferation and tumor angiogenesis. The binding of water-insoluble rapamycin to nanoparticle albumin permits the albumin-mediated endocytosis of rapamycin by tumor cells and endothelial cells.