Sirolimus and Paclitaxel on polymer-based drug-eluting stents: similar but different.

Abstract:
Recent clinical studies that investigated the efficacy of the two U.S. Food and Drug Administration-approved drug-eluting stent (DES) platforms Cypher (Cordis, Johnson and Johnson, Miami Lakes, Florida) and Taxus (Boston Scientific, Boston, Massachusetts) suggest that there are differences between both DES concerning neointimal growth. Both DES elute compounds that inhibit the cell cycle, but at different stages: Cypher stents elute sirolimus, which induces G1 cell cycle inhibition, and Taxus stents release paclitaxel, which predominantly leads to M-phase arrest. In an attempt to explain the differences observed in human studies, the properties of these stent-based compounds on critical molecular and cellular events associated with the pathophysiology of in-stent restenosis are discussed in detail with the conclusion that both sirolimus and paclitaxel are different in their pleiotropic anti-restenotic effects. This may be in part responsible for the differences observed in recent clinical studies.