



## Sonic Hedgehog Pathway as a Target for Therapy in Angiogenesis-Related Diseases

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Titre Sonic Hedgehog Pathway as a Target for Therapy in Angiogenesis-Related Diseases  
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Résumé en anglais  
Hedgehog (Hh) proteins belong to a class of morphogens involved in many biological processes during embryonic development; they are relatively silent during normal adult life although they may be recruited postnatally in response to tissue injury. Three secreted proteins have been identified: Sonic hedgehog (Shh), Desert hedgehog and Indian hedgehog. The interaction of Hh ligand with its receptor Patched-1 triggers the activation of smoothened and initiates transduction events that lead to the regulation of transcriptional factors belonging to the Gli family. Hh pathway orchestrates both coronary development and adult coronary neovascularisation by controlling the expression of multiple proangiogenic genes and anti-apoptotic cytokines. Shh pathway enhances the recruitment of endothelial progenitor cells in addition to the mechanisms described for other Hh and concurs to its myocardial protection. In cerebral ischemia, Hh mimicking molecules has been reported to limit damages caused by vessel occlusion. Besides, Shh carried by microparticles corrects endothelial injury through nitric oxide release. Anomalous activations of Hh pathway are implicated in various types of tumours including medulloblastoma, carcinoma of esophagus, stomach, pancreas and colon. Hh can influence angiogenesis in both positive and negative manner and they may have implication for therapeutic strategies to treat either ischemic or cancer diseases.

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