World Academy of Science, Engineering and Technology
International Journal of Mathematical and Computational Sciences
Vol:14, No:12, 2020

Blood Flow in Stenosed Arteries: Analytical and Numerical Study

Authors : Shashi Sharma, Uaday Singh, V. K. Katiyar

Abstract : Blood flow through a stenosed tube, which is of great interest to mechanical engineers as well as medical researchers. If stenosis exists in an artery, normal blood flow is disturbed. The deposition of fatty substances, cholesterol, cellular waste products in the inner lining of an artery results to plaque formation .The present study deals with a mathematical model for blood flow in constricted arteries. Blood is considered as a Newtonian, incompressible, unsteady and laminar fluid flowing in a cylindrical rigid tube along the axial direction. A time varying pressure gradient is applied in the axial direction. An analytical solution is obtained using the numerical inversion method for Laplace Transform for calculating the velocity profile of fluid as well as particles.

Keywords : blood flow, stenosis, Newtonian fluid, medical biology and genetics
Conference Title : ICSRD 2020 : International Conference on Scientific Research and Development
Conference Location : Chicago, United States
Conference Dates : December 12-13, 2020