

## Effects of the Non-Newtonian Viscosity of Blood on Flow Field in a Constricted Artery with a Porous Plaque

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**Abstract :** Nowadays many people lose their lives due to cardiovascular diseases. Inappropriate food habits and lack of exercise expedite deposit process of fatty substances on inner surface of blood arteries. This abnormal lump disturbs uniform blood flow and reduces oxygen delivery to active organs. This work presents a numerical simulation of Non-Newtonian blood flow in a stenosis vessel. The vessel is considered as two dimensional channel and plaque area is modelled as a homogenous porous medium. To simulate blood flow reaction around stenosis region, we use C++ code and solve coupled Cauchy, Darcy, governing continuity and energy equations. The analyses results show that viscosity power (n) plays an important role in flow separation and the size of the eddy at the downstream edge of the plaque. It is also observed that with increasing (n) value, temperature discontinuity and likelihood of vessel rupture declined.

**Keywords :** blood flow, computational fluid dynamic, porosity, power law fluid

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