

عنوان مقاله:

Mathematical modeling of blood flow in a stenosed artery under MHD effect through porous medium

محل انتشار:

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نویسندگان:

Ram Singh - Applied Mathematics, BGSB University

G. C. Sharma - Mathematics, I.B.S, AGRA

M. Jain - Mathematics, Department of Mathematics

خلاصه مقاله:

In this investigation, a mathematical model for studying oscillatory flow of blood in a stenosed artery under the influence of transverse magnetic field through porous medium has been developed. The equations of motion of blood flow are solved analytically. The analytical expressions for axial velocity, volumetric flow rate, pressure gradient, resistance to blood flow and shear stress have been derived. These expressions reveal significant alterations in blood flow due to stenosis. It is seen that magnetic field significantly controls the flow patterns. We have incorporated the magnetic field perpendicular to the flow of blood. The concept of porous medium is also taken into consideration which takes care of the suction factor. The effects of various parameters particularly magnetic number and porosity constant on the blood flow through stenosis have been examined. To validate the analytical results, numerical experiment is performed. The results obtained in the investigation are in reasonably good agreement with experimental findings existing in the literature.

کلمات کلیدی:

MHD Flow, Stenosis, Magnetic number, porosity, Axial velocity, Volumetric flow rate, Wall Shear Stress

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