عنوان مقاله:

Heat and Mass Transfer Analysis on MHD Peristaltic Prandtl Fluid Model through a Tapered Channel with Thermal Radiation

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خلاصه مقاله:

This paper deals with a theoretical investigation of heat and mass transfer with thermal radiation analysis on hydromagnetic peristaltic Prandtl fluid model with porous medium through an asymmetric tapered vertical channel under the influence of gravity field. Analytical results are found for the velocity, pressure gradient, pressure rise, frictional force, temperature and concentration. The influence of varied governing parameters is discussed and illustrated diagrammatically through a set of figures. It can be seen that the axial velocity enhances with an increase in gravity parameter. It is observed that the temperature of the fluid reduces within the tapered asymmetric vertical channel by an increase in thermal radiation parameter. Blood flow in concentration profile increases with an increase in thermal radiation parameter. It is worth mentioning that the rate of pumping rises in all the four regions, i.e. retrograde pumping region, peristaltic pumping region, free pumping region and an augmented region with an increase in Prandtl fluid parameter.

کلمات کلیدی:

Thermal radiation, MHD, Porous medium, Temperature, Mass transfer, Gravity filed

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