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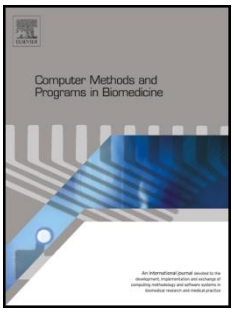

Title: Heat transfer analysis on peristaltically induced motion of particle-fluid suspension with variable viscosity: clot blood model

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Heat transfer analysis on Peristaltically induced motion of particle-fluid suspension with variable viscosity: Clot blood model

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Highlights

- Heat transfer analysis on peristaltic particle-fluid motion is proposed.
- The effects of variable viscosity and clot blood is also considered.
- Analytic solutions are obtained for fluid phase and particle phase.
- The influence of clot enhances the pressure rise significantly.
- Temperature profile increases due to greater effects of variable viscosity.

Abstract: In this article, heat transfer analysis on Clot blood model of the particle-fluid suspension through a non-uniform annulus has been investigated. The blood propagating along the whole length of the annulus induced by peristaltic motion. The effects of variable viscosity and slip condition are also taken into account. The governing flow problem is modelled using lubrication approach by taking the assumption of long wavelength and creeping flow regime. The resulting equation for fluid phase and particle phase are solved analytically and closed form solutions are obtained. The physical impact of all the emerging parameters is discussed mathematically and graphically. Particularly, we considered the effects of particle volume fraction, slip parameter, the maximum height of clot, viscosity parameter, average volume flow rate, Prandtl number, Eckert number and fluid parameter on temperature profile, pressure rise and friction forces for outer and inner tube. Numerical computations have been used to