

Effects of Heat and Mass Transfer on Peristaltic Flow of Carreau Fluid in a Vertical Annulus

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This article is devoted to the study of peristaltic transport of a Carreau fluid in a vertical annulus under the consideration of long wavelength. The flow is investigated in a wave frame of reference moving with the velocity of the wave. Exact solutions have been evaluated for temperature and concentration field, while approximated analytical and numerical solutions are found for the velocity field using (i) the perturbation method and (ii) the shooting method. The effects of various emerging parameters are investigated graphically.

Key words: Peristaltic Flow; Carreau Fluid; Annulus; Perturbation Solution; Numerical Solutions.