# Effects of Variable Viscosity on the Peristaltic Motion in a Third-Order Fluid

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This article deals with the variable viscosity effects on the channel flow of a third-order fluid. The walls of the asymmetric channel are of different temperatures. Continuity, momentum, and energy equations are utilized in the mathematical analysis. Three types of solutions, namely, the perturbation, homotopy analysis, and numerical are derived. These solutions are compared. The perturbation, homtopy analysis, and numerical solutions are identical up to three digits. The expressions for pressure rise and frictional forces have been calculated using numerical integration. The expressions for pressure rise, frictional forces, velocity profile, temperature profile, pressure gradient, and streamlines have been discussed graphically at the end of the article.

*Key words:* Variable Viscosity; Shooting Method; Comparison.