

# Unsteady Peristaltic Flow of Micro-Polar Fluid in a Finite Channel

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This is an attempt to model an unsteady peristaltic flow of micro-polar fluid in a channel of finite length. The channel is subjected to progressive sinusoidal waves that help the walls contract and relax but not expand beyond the natural boundary. It is found that the coupling number increases pressure along the entire length of the channel, while the micro-polar parameter decreases it. The coupling number increases the efficiency; while the micro-polar parameter decreases it. The reflux region is found to increase with the coupling number. One significant difference between integral and non-integral number of waves in the train propagating along the channel walls is that the peaks of pressure are identical in the integral case while the peaks are different in the non-integral case.

*Key words:* Peristalsis; Oesophagus; Micro-Polar Fluid; Mechanical Efficiency; Reflux; Trapping.