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SKIN FRICTION AND BLOOD FLOW ANALYSIS IN A NARROW ARTERY HAVING MULTIPLE STENOSES

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ABSTRACT

This work discusses the effects of blood flow parameters in narrow arteries with multiple stenoses, where blood is modelled as a non-Newtonian Kuang-Luo (K-L) fluid with no-slip conditions at the arterial wall. The main properties of the K-L fluid model are that the plasma viscosity and yield stress play a vital role. These parameters make this fluid remarkably similar to blood; however, the flow characteristics change significantly when we change these parameters. We have derived a numerical expression for the blood flow characteristics, such as resistance to blood flow, blood flow rate, axial velocity, and skin friction. These numerical expressions have been solved using MATLAB 2021, and the results have been discussed graphically. Furthermore, these results have been compared with Newtonian fluid, and observation was observed that resistance to blood flow and skin friction is decreased when blood is changed from non-Newtonian to Newtonian fluid.

***K*eywords** Blood Flow · Skin fraction · K-L model · Plasma Viscosity

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