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BOOK OF ABSTRACTS

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Laminar blood flow in stenotic microchannels

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Over the past few decades, the interest in the atherosclerosis's studies has assumed a prominent place in medicine since this cardiovascular pathology has become one of the major causes of death. This fact is a result of the lifestyle adopted by modern society. Sometimes, blood flow´s studies, either *in vivo* or *in vitro*, pose problems due to ethical reasons. Therefore, numerical tools have been gaining place in hemodynamics' field [1]. In this work, non-Newtonian laminar blood flow in rectangular microchannels with symmetric and asymmetric atheroma (Fig.1), were numerically studied. To describe the non-Newtonian properties of blood two models were used: Carreau model and Power Law model [2]. The results obtained were compared with the ones obtained for Newtonian flow, which enabled the evaluation of the impact of the non-Newtonian properties in the studied flows. In order to evaluate the impact of the stenosis' degree, the simulations were carried out for different cases of stenosis severity.

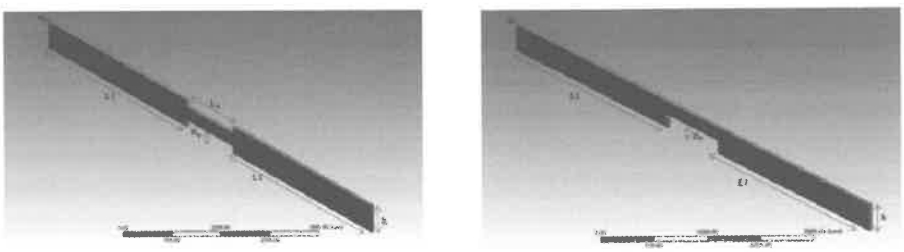

Fig. 1: Example of studied microchannels.

With this study, velocity profiles and pressure drops were analyzed for the three rheological models and different microchannels. It was observed that the impact of symmetry of the atheroma is almost negligible and the non-Newtonian properties of blood leads to higher pressure drops when compared with the ones obtained for Newtonian flows.

References

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