

Organic Additives for the Enhancement of Laminar Flow in a Brain-Vessels-Like Microchannel Assembly

Fiona W. M. Ling^{1,2}, Somaye Heidarini^{1,2}, Hayder A. Abdulbari^{1,2,*}

¹Centre of Excellence for Advanced Research in Fluid Flow (CARIFF), Universiti Malaysia Pahang
Lebuhraya Tun Razak, 26300 Gambang, Pahang, Malaysia.

²Faculty of Chemical and Natural Resources Engineering, Universiti Malaysia Pahang, Lebuhraya
Tun Razak, 26300 Gambang, Pahang, Malaysia.

abhayder@ump.edu.my

ABSTRACT

Organic polymers were extracted from okra, aloe vera, and hibiscus leaves and used as drag-reducing additives (DRAs) to enhance the laminar flow in custom-made microchannels that simulate the human brain vessels. The experiment was conducted using an open-loop microfluidic system. The flow enhancement performance was evaluated as the function of percentage of flow increment of mucilage additives at different concentrations. Okra mucilage showed greater flow enhancement performance at higher mucilage concentration while both aloe vera and hibiscus mucilage performed better at lower additive concentration. The findings prove the potential of these organic polymers as DRAs to enhance the blood flow.

KEYWORDS:

Brain vessels, Drag-reducing additives, Flow enhancement, Microchannels, Organic polymers

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