عنوان مقاله:

Investigation of non-Newtonian blood effects on magnetic drug delivery for chemotherapy applications in an artery vessel

محل انتشار:

پنجمین کنفرانس بین المللی پژوهش کاربردی در شیمی و مهندسی شیمی با تاکید بر فناوری های بومی ایران (سال: 1397)

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نویسندگان:

Mohammad Karim Dehghan Manshadi - *Department of Mechanical and Manufacturing Engineering, University of Calgary, Calgary, Alberta T۲N ۱N۴, Canada*

Mehdi Mohammadi - *Department of Biological Science, University of Calgary, Alberta T۲N ۱N۴, Canada*

Amir Sanati-Nezhad - *Center for Bioengineering Research and Education, University of Calgary, Calgary, Alberta T۲N ۱N۴, Canada*

خلاصه مقاله:

One of the non-invasive therapy methods is magnetic drug delivery. This method is widely used for curing different cancer tumors such as lung, brain, and liver tumors. In the current study the multi-layers artery tissue is considered as the desired place for drug delivery for the first time. Also, the effects of considering non-Newtonian characteristics for blood flow on magnetic particle trapping in an artery are investigated numerically. Four-layer artery tissue as well as power law blood flow through the vessel and the tissue, are considered. Effects of magnetic field strength and particle diameter are also studied. Results show that non-Newtonian blood flow in the investigated conditions has no significant effects on the total number of particles in different magnetic fields. For example, when the magnetic field strength is 2T, 10% of 1000 nm particles are trapped in the desired location. Therefore, in the same phenomena to reduce computational costs, blood flow can be considered as Newtonian fluids

کلمات کلیدی:

.Artery vessel, Drug delivery, Magnetic drug targeting, non-Newtonian blood flow