

Abstract

Magnetohydrodynamic (MHD) fluid flow in different geometries relevant to human body parts is an interesting and important scientific area due to its applications in medical sciences. This article performs a comprehensive review on the applications of MHD and their numerical modelling in biological systems. Applications of MHD in medical sciences are classified into four categories in this paper. Applications of MHD in simple flow, peristaltic flow, pulsatile flow, and drug delivery are these categories. The numerical researches performed for these categories are reviewed and summarized separately. Finally, some conclusions and suggestions for future works based on the literature review are presented. The results indicated that during a surgery when it is necessary to drop blood flow or reduce tissue temperature, it may be achieved by using a magnetic field. Moreover, the review showed that the trapping is an important phenomenon in peristaltic flows that causes the formation of thrombus in blood and the movement of food bolus in gastrointestinal tract. This phenomenon may be disappeared by using a proper magnetic field. Finally, the concentration of particles that are delivered to the target region increases with an increase in the magnetic field intensity.