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# Mathematical Analysis of Blood Flow in Micro Circulatory System

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## ABSTRACT

*Fluid Dynamics is a popular branch which deals with flow of substances like liquid and gases etc. There are many techniques available and among them some most powerful techniques are equation of continuity, equation of motion, velocity potential…..etc., which helps to define motion of particles. In this research paper our aim to define flow of blood in human bodies. We shall study in flow of blood in micro circulatory system.*

***Keywords*: *Blood Flow, Circulatory system, Incompressible, Reynolds equation, velocity.***

## I.INTRODUCTION

Biomechanics is the important branch of bio engineering, in biomechanics principle of fluid mechanics are applied in biological problems. It is well accepted fact that the flow of blood everywhere in body doesn't exhibit the same pattern. An examination of the microcirculation reveals that the normal blood flow is extensively rapid in the arterioles and somewhat slower in the connecting venules, ramifying between these vessels are the capillaries which are so fine that their caliber is less than that of the red cells which must travel through them. The steady flow of a suspension of neutrally buoyant particles through a circular cylindrical tube has been extensible considered as a model of capillary blood flow while a sample of human blood seen under the microscope can only hint at the complete cellular and chemical components of which it is mode. The red cells which vastly outnumbered all other type of blood cells and which largely determine the physical characteristics of the blood look relatively featureless with little evidence of structure even at high power of magnification. Even then to make the study simpler, the workers considered the rigid and flexible particles of many different shapes as a model of blood cells. For example- Influence of radial distribution.

## II.BROAD OUTLINE OF THE WORK

In our problem we have considered the rigid and elastic particles of initially spherical shape moving axis symmetrically with uniform velocity through a circular cylinder tube. The suspending fluid is assumed to be incompressible and Newtonian (called plasma). In another study, we shall consider the flow through the tapered tube and shall use Reynolds equation in one dimension.

## III.CONCLUSION

The Reynolds number in the microcirculation is typically of the order of $10^{-3}$, hence the fluid inertia terms are neglected and in the equation of motion. Pressure gradient term in solely balanced by the viscous force. Principles of fluid mechanics and equation of motion and continuity equation will be used in forming and solving the blood flow problems.

Scientific calculators and computers will be used for solving problems.

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