and experimentally by various scholars like Pop[1], Pop and Soundalgekar[2], Soundalgekar[3], Singh *et al.*[4], Das *et al.*[5], Gupta *et al.*[6], Sahoo *et al.*[7], Ahmed[8], Neeraja *et al.*[9].

The study of visco-elastic fluid flows have wide applications in various branches of science and technology with or without magnetic field. The aim of the present paper is to study the flow and heat transfer in three dimensional MHD visco-elastic flow past a porous plate. A uniform magnetic field is applied parallel to the free convection flow of an electrically conducting visco-elastic fluid past a infinite vertical porous plate with a slightly sinusoidal transverse suction velocity distribution. The magnetic Reynolds number is assumed to be small enough so that induced magnetic field is neglected.

The constitutive equation for Walters liquid (Model B')

$$\sigma^{ik} = -pg^{ik} + 2\eta_0 e^{ik} - 2k_0 e'^{ik} \quad (1.1)$$

where σ^{ik} is the stress tensor, p is isotropic pressure, g^{ik} is the metric tensor of a fixed co-ordinate system x^i, v^i is the velocity vector, the contravariant form of e'^{ik} is given by

$$e'^{ik} = \frac{\partial e^{ik}}{\partial t} + v^m e^{ik}{}_{,m} - v^k{}_{,m} e^{im} - v^i{}_{,m} e^{mk} \quad (1.2)$$

It is the convected derivative of the deformation rate tensor e^{ik} defined by

$$2e^{ik} = v^i{}_{,k} + v^k{}_{,i} \quad (1.3)$$

Here η_0 is the limiting viscosity at the small rate of shear which is given by

$$\eta_0 = \int_0^\infty N(\tau)\,d\tau \text{ and } k_0 = \int_0^\infty \tau N(\tau)\,d\tau \quad (1.4)$$

$N(\tau)$ being the relaxation spectrum as introduced by Walters[10,11]. This idealized model is a valid approximation of Walters liquid (Model B') taking very short memories into account so that terms involvings

$$\int_0^\infty t^n N(\tau)\,d\tau,\ n \geq 2 \quad (1.5)$$

have been neglected.

2. *Mathematical formulation and Analysis*

Hydrodynamic free convection flow of a visco-elastic incompressible and electrically conducting fluid past an infinite vertical, porous plate subjected to a slightly sinusoidal transverse suction velocity in the presence of a uniform magnetic field is considered. The sinusoidal suction velocity distribution at the plate is considered to be of the form

$$\bar{v}\,(\bar{v}) = -v_0\left(1+\varepsilon \cos \frac{\pi \bar{z}}{L}\right) \quad (2.1)$$

where $\varepsilon << 1$

which consists of a basic steady distribution $v_0 > 0$ superimposed with a very weak distribution $\in v_0 \cos \frac{\pi z}{L}$. Here L is the wave