CONCLUSION

Mushrooms have been valued throughout the world as both food and medicine for thousands of years. Several commercial mushrooms are reported to be effective against various diseases. The data recorded in the above experiments demonstrate that the qualitative and quantitative mycochemical screening of the edible mushroom *Hypsizygus ulmarius* methanolic extract showed the presence of bio pharmaceutical bioactive metabolites mainly phenolics and flavonoids that provide protection against oxidative stress induced diseases. Further identification of bioactive metabolite compound is necessary required to understand the nature and properties of the compound.

Identifying new sources may bring natural products into the food industry with safer and better antioxidants that provide good protection against the oxidative damage. The present study suggests that high antioxidant activity in methanolic extract of *Hypsizygus ulmarius* mushroom can potentially be used as a source of therapeutic and natural antioxidant due to the presence of radical scavenging property. Further, the chemical characteristics of the antioxidative components in the extracts could be investigated.

Resistance to antibiotics is emerging in a wide variety of organism and multiple drug resistant organism pose a serious threat to the treatment of infectious diseases. Hence, mushroom derived antimicrobial substances have received considerable attention in recent years. It was apparent from the present study that mushroom methanolic extract from *Hypsizygus ulmarius* exert strong
antimicrobial activity that could be employed as therapeutic agent for the development of new drugs to combat several diseases caused by pathogenic microorganisms.

Carboxylesterases are very diverse in their physiological properties, suggestive of their potential biotechnological application. The fruiting bodies of this medicinal mushroom *Hypsizygus ulmarius* produced an esterase with high specificity towards short-chain ester, a moderate thermostability and acidophilic properties. This mushroom could potentially be used as a biocatalyst in the food, chemical and pharmaceutical industries. Further, carboxylesterase encoding genes have to be cloned from various mushrooms species.

It is very important to obtain enzymes with high stability and activity in the presence of oxidants, denaturant agents, pH and temperature. The results point out that the essential properties of *Hypsizygus ulmarius* alkaline protease can be exploited in various important bioformulations and industrial applications. Protein engineering has played a central role in improving commercially important enzymes and in finding new applications of proteins quite different from their natural function. In future, protein engineering will offer possibilities of generating proteases with entirely new functions.