CHAPTER V
CONCLUSION

From the experimental studies in this thesis, the polyphenolic antioxidant isolated from seed coat of *Tamarindus indica* Linn has the chemical characteristics and absorption spectra which are similar to oligomeric proanthocyanidin (OPC), a condensed tannin group of flavonoid. The antioxidative substance is completely soluble in methanol and partially in water. In addition, it has a high degree of *in vitro* antioxidant activity which is stable and still biologically active as high as 140^{o}C. The active compound isolated directly acts as a scavenger against free radicals, peroxyl radicals, hydroxyl radicals and superoxide anions in certain systems. Its antioxidative mechanism is particularly different from vitamin E, Trolox and vitamin C but partially similar to curcumin as an iron-chelator. Furthermore, it is a potent antioxidant which can prevent lipid peroxidation and protect Ca^{2+}-ATPase on red blood cell membranes from free-radical generating reaction.

In conclusion, the antioxidative mechanism of the proanthocyanidin-typed polyphenolic substance isolated from tamarind seed coat against reactive oxygen species and lipid peroxidation may mainly depend on its iron chelating property and scavenger activity which rely on its structure owning several hydroxyl groups. This antioxidant mechanism can then effectively prevent oxidative damage of cellular Ca^{2+}-ATPase from free-radical generating reaction. More other biochemical activities and mechanism of action against *in vivo* cellular oxidative damage as well as health applications of the antioxidative compound isolated and purified from tamarind seed should be very significant and further studied.