

## **Analysis of thermal inactivation kinetics of membrane-bound polyphenol oxidases and peroxidases from Metroxylon sagu.**

### **ABSTRACT**

Thermal inactivation kinetics for the purified membrane-bound polyphenol oxidases (mPPOs) and peroxidases (mPODs) isolated from *Metroxylon sagu* were analyzed. Each isoenzyme was treated at different time-temperature combinations in the range of 0-70min and 20-70C. Thermal inactivation rates constant (k) at 70C for mPOD-I ( $72.9 \times 10^{-3}/\text{min}$ ) and mPOD-II ( $97.9 \times 10^{-3}/\text{min}$ ) were lower than that of mPPO-I ( $379.7 \times 10^{-3}/\text{min}$ ) and mPPO-II ( $138.1 \times 10^{-3}/\text{min}$ ). The activation energy for inactivation of mPPO-I (32.94kcal/mol) and mPPO-II (40.34kcal/mol) was lower compared with mPOD-I (45.77kcal/mol) and mPOD-II (40.62kcal/mol). The enthalpy values for mPOD-I (45.08kcal/mol) and mPOD-II (39.94kcal/mol) were higher than those of mPPOs (mPPO-I, 32.26kcal/mol; mPPO-II, 39.66kcal/mol). This result implies that both mPOD-I and mPOD-II are more thermostable.

**Keyword:** Membrane bound enzymes; Polyphenol oxidases; Peroxidases.