inhibitory activity. However, the petroleum ether, chloroform and hot water showed lower inhibitory activity compared to the standard acarbose (IC_{50}: 56 μg/mL). It appears, therefore, that the active components in the acetone and methanol extracts may be responsible for the significant inhibitory activity of the plant. α-Amylase inhibitory activity of the extracts are also shown in Figures 6.1 and 6.2. Among the extracts, the methanol extract of leaves and bark and the acetone extract of fruit (IC_{50} values 66, 65 and 43 μg/mL, respectively,) showed strong α-amylase inhibitory activity when compared to standard acarbose with an IC_{50} value of 35 μg/mL. However, petroleum ether extract was found to have a less inhibitory effect against α-amylase.

6.4 DISCUSSION

Plants play a major role in the discovery of new therapeutic agents and have received much attention as sources of biologically active substances, including antioxidants, hypoglycemic and hypolipidemic agents (Marles and Farnsworth 1995). Flavonoids and polyphenols are being used to treat diabetes and dyslipidemia (Martinello et al. 2006). This is based on the fact that, excessive oxidative stress is implicated in the pathology and complications of diabetes mellitus, and polyphenols with antioxidant properties exert beneficial antidiabetic effects by correcting the disturbed oxidative milieu in diabetic conditions (Abdelmoaty et al. 2010; Tiwari and Rao 2002). Between 2001 and 2005, four new drugs derived from natural products were introduced for the treatment of dyslipidemia and diabetes (Lam 2007).

α-Amylase inhibitory activity of *F. amplissima* leaf, bark and fruit extracts showed appreciable activity. Among the extracts, the methanol extract of bark and the acetone extract of fruit showed strong α-amylase inhibitory activity with an IC_{50} value of 65 and 43 μg/mL, respectively. Following the above extract, chloroform and hot water extracts exhibited better α-amylase inhibitory activity.

In the α-glucosidase inhibition of *F. amplissima*, all the extracts displayed potent α-glucosidase inhibitory activity at the primary screening concentration. Among the extracts, bark methanol and fruit acetone extracts displayed strong α-glucosidase inhibitory activity (IC_{50}: 86 and 98 μg/mL, respectively). It appears therefore that active components in acetone and methanol extracts may be responsible for significant inhibitory activity of the extracts. The methanol extract from leaves of *Adhatoda vasica* reported high α-glucosidase inhibitory activity (Hao et al. 2008).

Traditional systems of medicine used plants and herbal extracts as antidiabetic agents. Therefore, investigation of such agents from traditional medicinal plants has become more important, and researchers are competing to find new, effective and safe therapeutic agents for the treatment of diabetes. In this regard, *F. amplissima* was identified as a good α-glucosidase and α-amylase inhibitor, which will decrease the postprandial glucose level in the blood and can be used to manage diabetes.

6.5 CONCLUSION

The extracts of *F. amplissima* were screened for potential inhibitory activity on α-amylase and α-glucosidase. The results indicated that the methanol extract of bark