CHAPTER IV

CONCLUSION

Extraction of the seed kernels of *Caesalpinia major* (Medik.) Dandy & Exell. with methanol resulted in methanolic-crude extract which was further fractionated into hexane, chloroform, butanol and water respectively. Using chromatographic separation, recrystallization and preparative TLC techniques 4 compounds were isolated.

Compound I (1.68×10^{-2} % yield) was isolated from methanol fraction, together with Neocaesalpin B (3×10^{-4} % yield), a mixture of stigmasterol and β-sitosterol (2×10^{-4} % yield) were isolated from hexane fraction, while Compound IV (2×10^{-4}% yield) was isolated from chloroform fraction. All of the isolated compounds were characterized by their physicochemical properties. The spectroscopic techniques revealed the structure of furanoditerpene for Compound I and Compound IV cassane diterpene for Neocaesalpin B and steroid compounds for (stigmasterol and β-sitosterol).

Compound I is a new caesalpin-type diterpenoid that had not been previously report. The structure of new compound was related to ε-caesalpin in that it is C-14-deoxy analogue of ε-caesalpin.

Compound II was found to be neocaesalpin B which had not been previously report in *Caesalpinia major* (Medik.) Dandy & Exell.

The NMR spectrum of Compound IV indicated the relationship between Compound IV Compound I. In comparison, Compound IV has one ketone group at C-14 while, Compound I has no ketone group. It was also observed that proton and carbon in the proximity of C-14, e.g., H-8, H-9, C-12 and C-13, underwent significant downfield shifts. The outstanding difference being the presence of triplet sp^3 carbon (δ 20.54) in place of a secondary sp^3 carbon at C-14. High resolution NMR spectroscopy

such as 500 MHz NMR and 2D techniques may be used for further study of this compound to provide unambigous assignment of the structure.

Compound I was subjected to antifeedant test against Greater Wax Moth and it showed no activity. However, compounds with related structure to I, II and IV has been known in other species of the plants which were used for treatment of various symtoms. It is therefore expected that I, II and IV could posses interesting biological activities and they may be responsible for therapeutic activity in *Caesalpinia major* (Medik.) Dandy & Exell.

Suggestion for future work

Relative stereochemistry of ϕ-caesalpin should be studied by NOESY experiment and X-ray crystallography. The structure of η-caesalpin should be confirmed by 2D NMR. Study of other compounds in the seed kernels extract of *C. major* should be continue as well as their biological activity.

Table 4.1 All substances isolated from the seeds of *Caesalpinia major* (Medik.) Dandy & Exell.

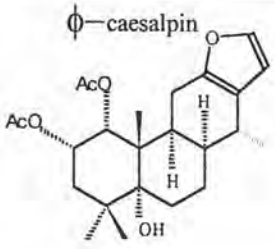
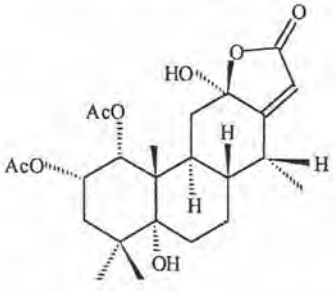
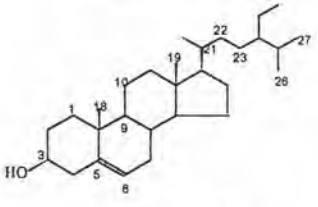
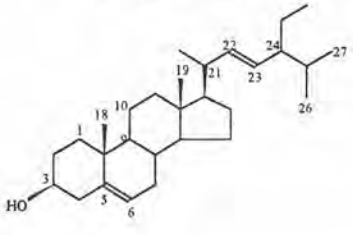
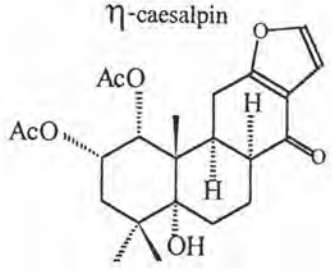
Substance	Weight (mg)	% wt. by wt. of fresh seeds ($x10^{-2}$)
ϕ—caesalpin 	504	1.68
Neocaesalpin B 	10	0.03
β-sitosterol  stigmasterol 	6.9	0.02

Table 4.1 (continued)

Substance	Weight (mg)	% wt. by wt. of fresh seeds ($x10^{-2}$)
η-caesalpin 	7.2	0.02