

ABSTRACT

The use of herbal medicines in diabetes treatment is still an ongoing practice in Third World Countries. The bark of the Cashew (*Anacardium occidentale*) tree is believed to control diabetes and a preliminary study by Morrison and West in 1982 at the University of the West Indies, showed that a crude extract exhibited significant hypoglycaemic activity. Attempts were made in this investigation to isolate, purify and elucidate the structures of compounds found to show this activity.

The isolation method involved solvent extraction while purification was performed using various chromatographic techniques. The compounds were analysed using High Resolution Fourier Transformation-Nuclear Magnetic Resonance (Ft-NMR) and Total Correlation Spectroscopy (TOCSY), etc. The extracts were found to contain the compounds: stigmast-4-en-3-one and stigmast-4-en-3-ol.

Oral and intravenous administrations of the hexane extracts from *A. occidentale* to normal, healthy dogs produced significant lowering of blood glucose levels. Crude extracts were administered orally while the purified fractions were assayed intravenously thus comparing both methods. Both methods showed the hypoglycaemic effect, thus it can be postulated that the

compounds possibly act at the tissue level and not at the gut level. The activities were assayed by the Oral Glucose Tolerance Test (OGTT).

A dose-response relationship was performed with the natural products isolated and found that as the dose was increased the activity was also more significant. In all experiments, each animal was used as its own control and the two named compounds showed significant blood sugar lowering effects both in the fasting and in the post-prandial glucose state ($P < 0.05$ at 95% confidence limit).

The structure activity relationship (SAR) was investigated by comparison with the standard (+) cholest-4-en-3-one.

The natural product, stigmast-4-en-3-one isolated, is not 100% pure enantiometrically but contains a mixture of 90% (+ve form) : 10% (-ve form) which is believed to increase its biological activity. This, as well as the presence of the corresponding alcohol which is also active due to structural similarities and is easily oxidised to the ketone, increased the hypoglycaemic effect, all three of which show synergistic effects.