

## Studies on organic non-covalent binders of $\beta$ -sitosterol

P R Wijemanne<sup>1</sup>, P M Jayaweera<sup>2</sup> and E R Jansz<sup>1\*</sup>

<sup>1</sup> *Department of Biochemistry, Faculty of Medical Sciences, University of Sri Jayewardenepura, Gangodawila, Nugegoda*

<sup>2</sup> *Department of Chemistry, Faculty of Applied Sciences, University of Sri Jayewardenepura, Gangodawila, Nugegoda*

The  $\beta$ -sitosterol moiety is the common sterol found in a group of compounds known as flabelliferins which are found in palmyrah fruit pulp (PFP), and is known to bind phytofluene and phytoene. It was recently reported that due to impurities isolation from plant sources was problematic. These studies showed that commercial  $\beta$ -sitosterol contained many impurities which can be separated by using a chromatotron, the fluorescent fractions of which were pooled and analysed by RP-HPLC. The fluorescent impurity gave many peaks, none of which coincided with phytofluene and phytoene, showing there were many other binders to  $\beta$ -sitosterol, some of which were probably not fluorescent. Phytofluene isolated from PFP and purified  $\beta$ -sitosterol from Sigma, USA, was mixed and left to stand overnight. The mixture was subjected to thin layer chromatography (TLC). UV light and anisaldehyde were used to detect phytofluene and  $\beta$ -sitosterol respectively. The two compounds co-chromatographed indicating an association. The purified  $\beta$ -sitosterol was used to quench the fluorescence of phytofluene which was detected by a luminescence spectrometer to calculate the

association constant. Phytofluene,  $\beta$ -sitosterol and the associated complex were analysed by FT-IR spectroscopy for changes in the spectra. The fluorescence spots and the anisaldehyde spots on the TLC paper overlapped confirming their association, while the quenching studies showed an association constant of  $\log K_{\text{ass}}=5.044$  ( $R^2=0.9817$ ), and FT-IR showed minimal distortions between the spectra of complex and the reactants, suggesting a non-covalent binding.

Acknowledgement: The authors thank IPICIS Sri: 07 for funds.

\* [erjansz@sjp.ac.lk](mailto:erjansz@sjp.ac.lk)

Tel: 011-2803578