



**VICTORIA UNIVERSITY**  
MELBOURNE AUSTRALIA

*Rapid measurement of phytosterols in fortified food using gas chromatography with flame ionization detection*

This is the Accepted version of the following publication

Modica, Samantha Huynh, Strobel, N, Buddhadasa, S, Stockham, Katherine, Auldist, M, Wales, B, Orbell, John and Cran, Marlene (2016) Rapid measurement of phytosterols in fortified food using gas chromatography with flame ionization detection. *Food Chemistry*, 211. 570 - 576. ISSN 0308-8146

The publisher's official version can be found at  
<http://www.sciencedirect.com/science/article/pii/S0308814616307932>  
Note that access to this version may require subscription.

Downloaded from VU Research Repository <https://vuir.vu.edu.au/32860/>

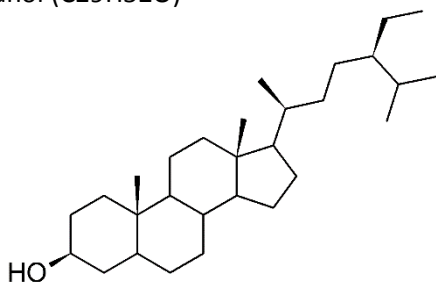
## Supplementary Material

### Rapid measurement of phytosterols in fortified food using gas chromatography with flame ionization detection

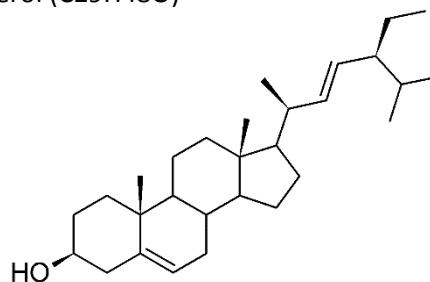
Samantha Duong<sup>1,3</sup>, Norbert Strobel<sup>1</sup>, Saman Buddhadasa<sup>1</sup>, Katherine Stockham<sup>1</sup>, Martin Auld<sup>2</sup>, Bill Wales<sup>2</sup>, John Orbell<sup>3</sup> and Marlene Cran<sup>3\*</sup>

**Figure S1.** Structures of common phytosterols (Moreau et al., 2002).

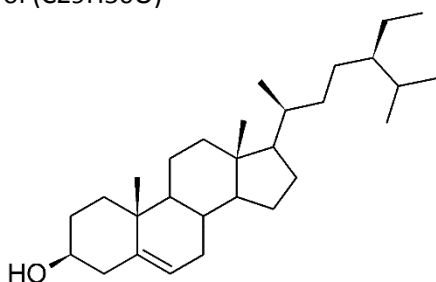
Stigmastanol (C<sub>29</sub>H<sub>52</sub>O)



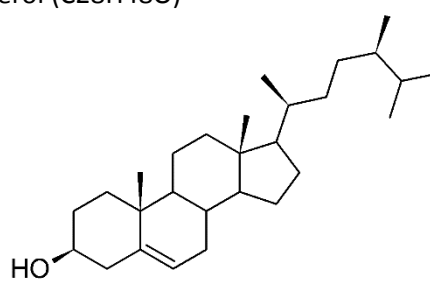
Stigmasterol (C<sub>29</sub>H<sub>48</sub>O)



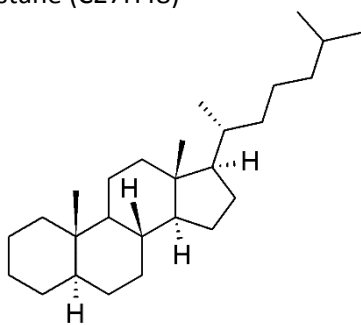
β-sitosterol (C<sub>29</sub>H<sub>50</sub>O)



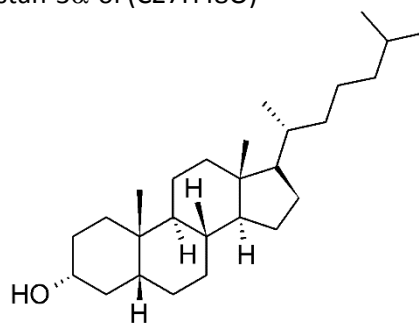
Campesterol (C<sub>28</sub>H<sub>48</sub>O)



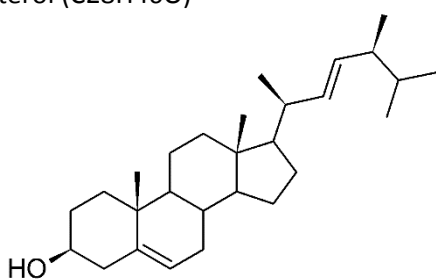
5α-cholestane (C<sub>27</sub>H<sub>48</sub>)



5β-cholestan-3α-ol (C<sub>27</sub>H<sub>48</sub>O)

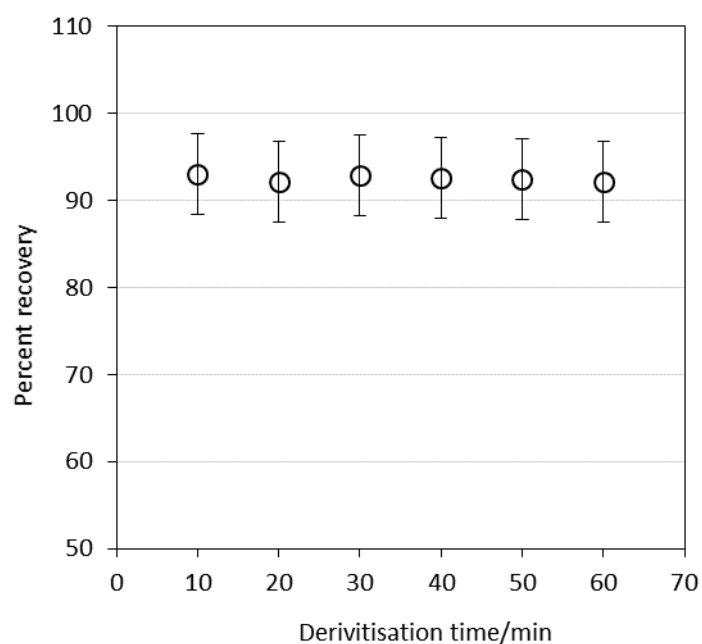


Brassicasterol (C<sub>28</sub>H<sub>46</sub>O)



**Table S1.** Plackett Burnman experimental design to investigate critical method parameters.

Experiment	Extraction solvent	Incubation temperature /°C	Saponification mixture	Saturated NaCl	Aqueous HCl	Water
A	Toluene	100	2.3 M NaOH in methanol	Yes	Yes	
B	Toluene	80	2.3 M KOH in methanol	Yes	Yes	
C	Toluene	100	2.3 M NaOH in methanol	Yes	Yes	
D	Toluene	100	2.3 M NaOH in methanol	Yes	No	
E	Heptane	100	2.3 M NaOH in methanol	Yes	Yes	
F	Toluene	100	2.3 M NaOH in methanol	No	Yes	
G	Heptane	80	5M ethanolic KOH	No		Yes
H	Heptane	80	5M ethanolic KOH	Yes		Yes
I	Heptane	80	5M ethanolic KOH	Yes		No

**Figure S2.** Effect of BSTFA/TCMS derivatisation time on sterol recovery.**Equation S1.** Recovery calculation.

$$\text{Recovery \%} = \frac{\text{sample value}}{\text{theoretical certified value}} \times 100$$