

# Impact of sterilization on phytosterols in canned tuna-based products

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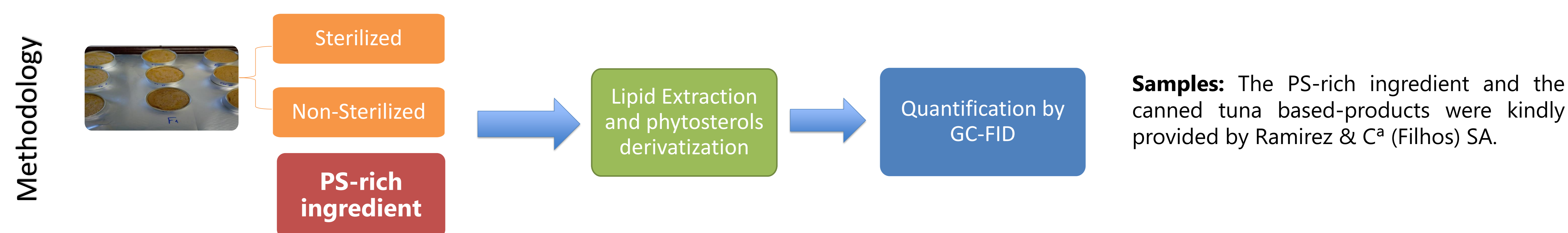
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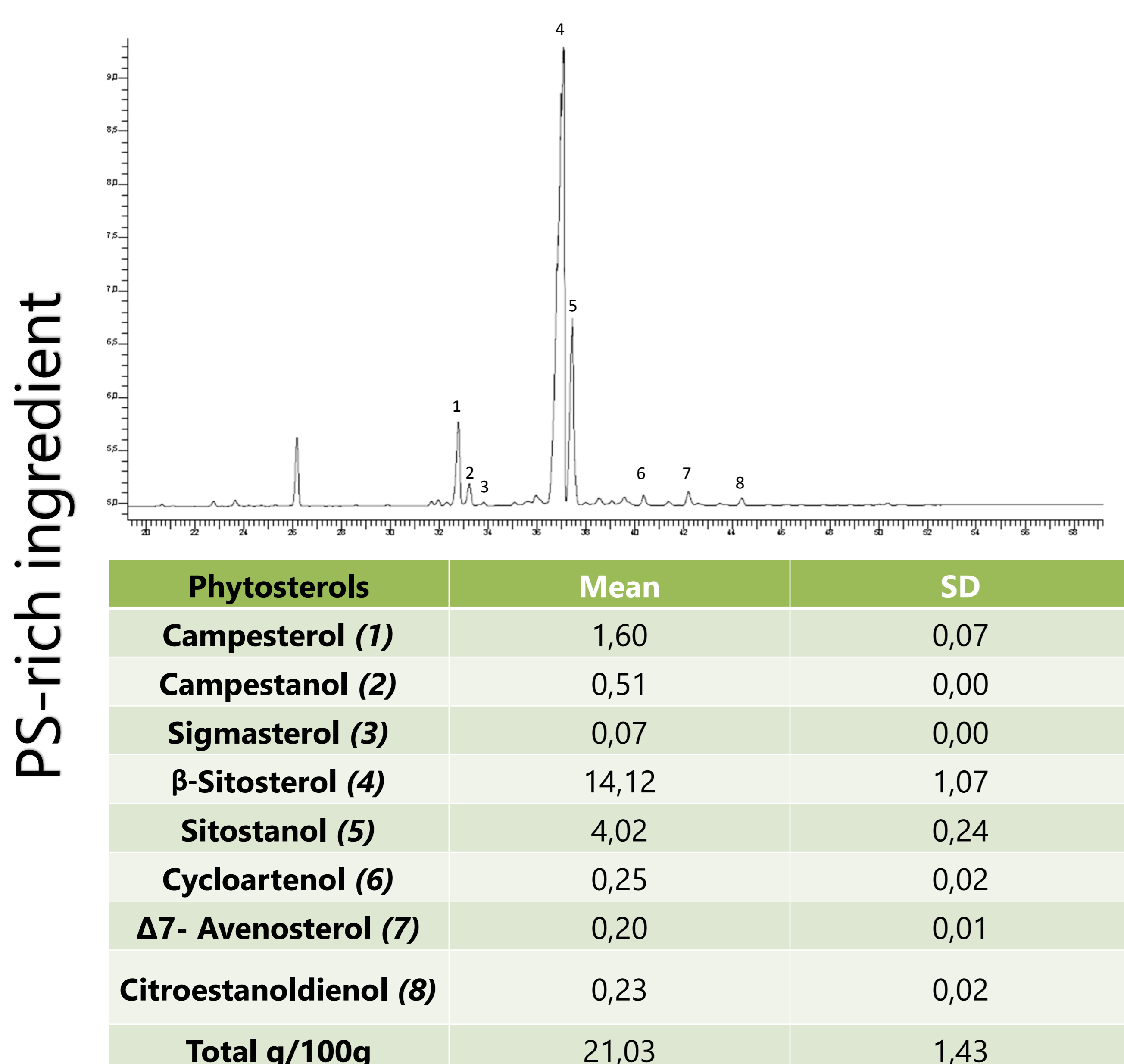
## Introduction & Objectives

Phytosterols (PS) are characterized by a tetracyclic ring and a side chain linked to carbon 17. They can be classified according to the presence or absence of a double bond at  $\Delta 5$  position (sterols or stanols respectively)(1,2). These compounds occur naturally in all foods of plant origin, such as vegetable oils, nuts, seeds, grain products, fruits and vegetables. Normal daily intake from natural sources is 200–400 mg/day (3). PS enriched foods are considered a valuable option as part of a healthy diet (1). The beneficial effects of these compounds have been demonstrated by several studies and consequently the European Food Safety Authority (EFSA) and the Food and Drug Administration (FDA) approved their use in functional foods. EFSA recommends a continuous daily intake of 3 g of PS during two to three weeks to obtain their claimed effects. In this context, the main objectives of this study were the characterization of the sterols profile of a commercial functional PS-rich ingredient as well as the evaluation of its stability after sterilization (119°C; 45 min) of a canned tuna-based product enriched in this ingredient. Accordingly, the sterol profile was assayed by GC-FID (4).

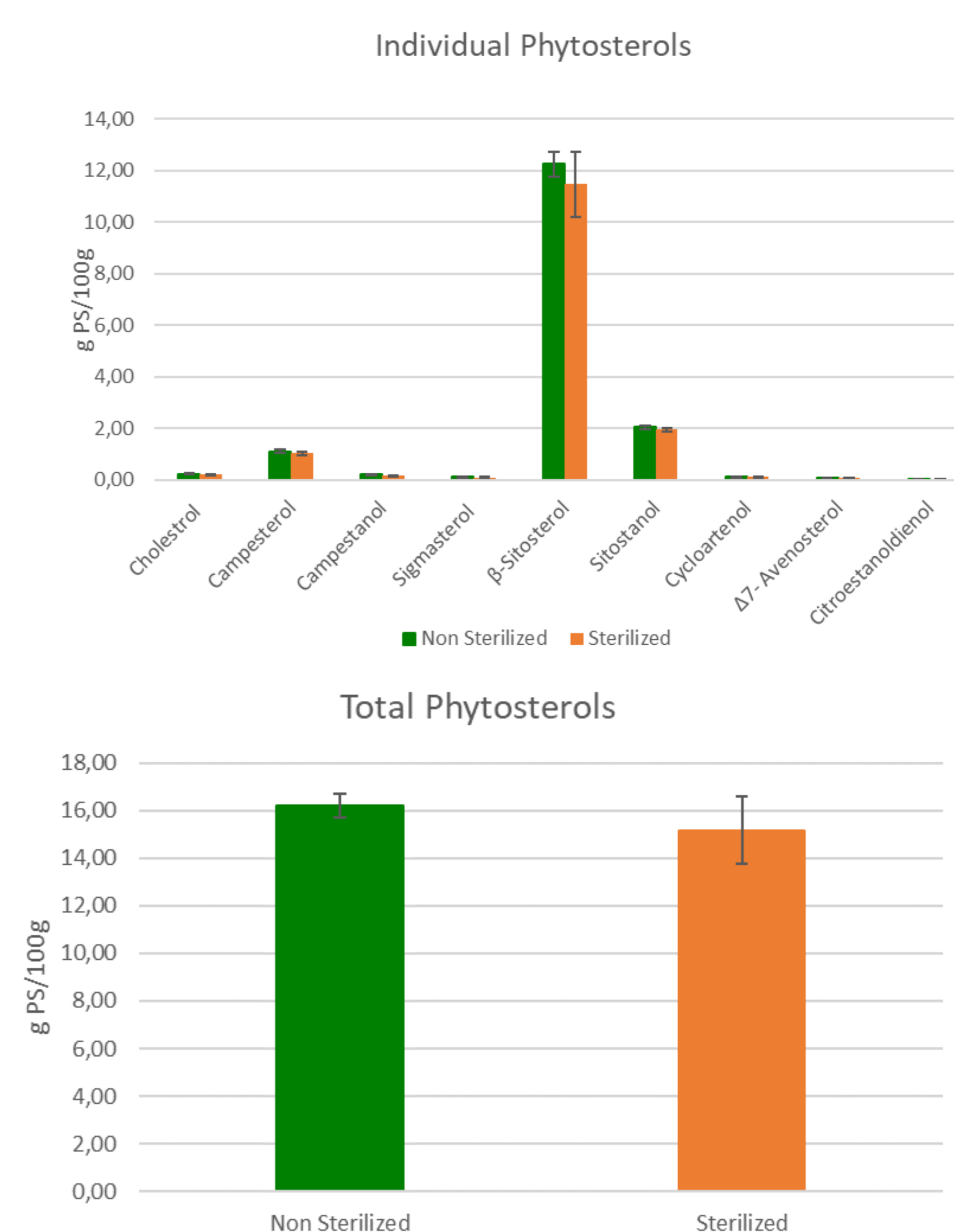
## Materials & Methods



## Results



Enriched canned tuna-based product



## Conclusions

The results showed that the sterilization process did not affect the sterol profile.  $\beta$ -sitosterol is the predominant sterol in all the tested samples. PS content in the novel tuna-based product complies with EFSA recommendations regarding cardiovascular health.

### References

- Gylling H, Plat J, Turley S, Ginsberg HN, Ellegård L, Jessup W, et al. Atherosclerosis. **2014**;232(2):346–60.
- Marangoni F, Poli A. Pharmacol Res. **2010**;61(3):193–9. Available from: <http://dx.doi.org/10.1016/j.phrs.2010.01.001>
- Jiménez-Escrig A, Santos-Hidalgo AB, Saura-Calixto F. J Agric Food Chem. **2006**;54(9):3462–71.
- Karavanou N, Andrikopoulos AENK. **2008**;391–400.

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