

## **Thermo-oxidative Degradation of Phytosterols**

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Degradation of cholesterol was researched extensively but mainly dedicated to the formation of oxidative derivatives. Similar chemical structures of phytosterols make them prone to the same type of reactions. When the mixture of five phytosterols, namely brassicasterol, campesterol, stigmasterol, sitosterol and avenasterol were heated at temperature mimicking food processing for different period of time the following groups of compounds were detected: oxidized sterols, partial sterol molecules, volatile compounds and oligomers. Summing up all components formed we were able to balance the amounts of disappearing sterols with components formed. We established that the amount and type of products formed is affected by time and temperature. The amount of intact sterols decreased when temperature and time increased. The amount of oxidized sterols was at the highest level when drying temperature of 60°C was applied, whereas the lowest amounts was observed when baking (120°C) and frying (180°C) temperatures were used. At later temperature the amount of oxidized sterols was lower than at the former, where time affected their amount negatively. This observation indicates that oxidized sterols are thermolabile and are the main precursors for a variety of other products formed. The amount and type of formed volatile compounds increased proportionally to the increase of time and temperature and most of these components can be a part of off-flavor in particular food. Fragmented sterol components and oligomers were the main compounds formed during thermo-oxidative degradation of phytosterols, particularly when elevated temperatures were applied.