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## BOOK OF ABSTRACTS



## Cocoa bean shell as food ingredient to enhance the functional properties and nutritional quality of ice cream

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Cocoa bean shell (CBS) is a main by-product of cocoa processing, rich in fiber (> 50% w/w), and polyphenols with high antioxidant activity, recognized as dietary factors responsible for potential beneficial effects on human health. In contrast, ice cream is a poor source of these phytochemicals and antioxidants but very rich on fat. Therefore, the present study was conducted to enhance the functional properties and nutritional quality of cream ices by the incorporation of CBS flour as fat replacer and source of fiber and polyphenols with antioxidant activity.

In this study, the effect of the addition of CBS flour at different levels (0, 2, 4, 6 and 8% w/w), as a partial substitute of milk cream, on the physical, chemical, sensory and antioxidant properties of ice cream was investigated. With the addition of CBS flour it is possible to reduce fat content and increase protein, ash and fiber content of ice cream. Moreover, the amount of functional components, i.e. total phenolic compounds, total flavonoids and tannins, increased significantly as well as the antioxidant activity. Additionally, sensory properties of ice cream were positively affected by the addition of CBS due to cocoa flavour characteristics.

Considering the functional and nutritional improvements of enhanced ice cream together with overall acceptability results of the sensory analysis, ice cream enriched with CBS up to 4% (w/w) could be an interesting product to be introduced to markets as functional product.

The results highlighted that CBS could be a promising food ingredient since it can be used as source of dietary fiber and bioactive compounds such as polyphenols with high antioxidant activity, minimizing the volume of agro-industrial wastes and their environmental impact.

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