The effects of rosemary and grape seed on the oxidation of cocoa butter and melting, rheology, shelf life, antioxidant activity of dark chocolate

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Abstract

The effects of rosemary (Rosmarinus officinalis) powder (RP) and grape seed (Vitis vinifera) powder (GSP) additions at 0.1%, 0.5% and 0.8% on melting, rheology, shelf life and antioxidant activity of dark chocolate and the oxidative induction time (OIT) of cocoa butter were investigated. The melting parameters and OITs were determined by using a differential scanning calorimetry and accelerated shelf-life analysis were monitored by the schaal oven test at 30, 40, 50 oC for 100 days. The melting properties and the rheology of the samples were not affected by the addition of RP or GSP, whereas OIT and the prevention factor (PF) of the cocoa butter increased with the additions. The temperature coefficient (Q10) and the activation energy (Ea) values for the samples decreased with the addition of GSP at 0.8%. Additions of RP at 0.8% or GSP at 0.5% and 0.8% increased the total phenolic contents of chocolate significantly. The outcomes indicated that the shelf-life and nutritional value of dark chocolate increased with the additions of RP or GSP whereas the main process characteristics kept constant.

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