11º CONGRESSO NACIONAL DE **CROMATOGRAFIA**

20 anos CROMATOGRAFIA

# 11th NATIONAL MEETING ON CHROMATOGRAPHY

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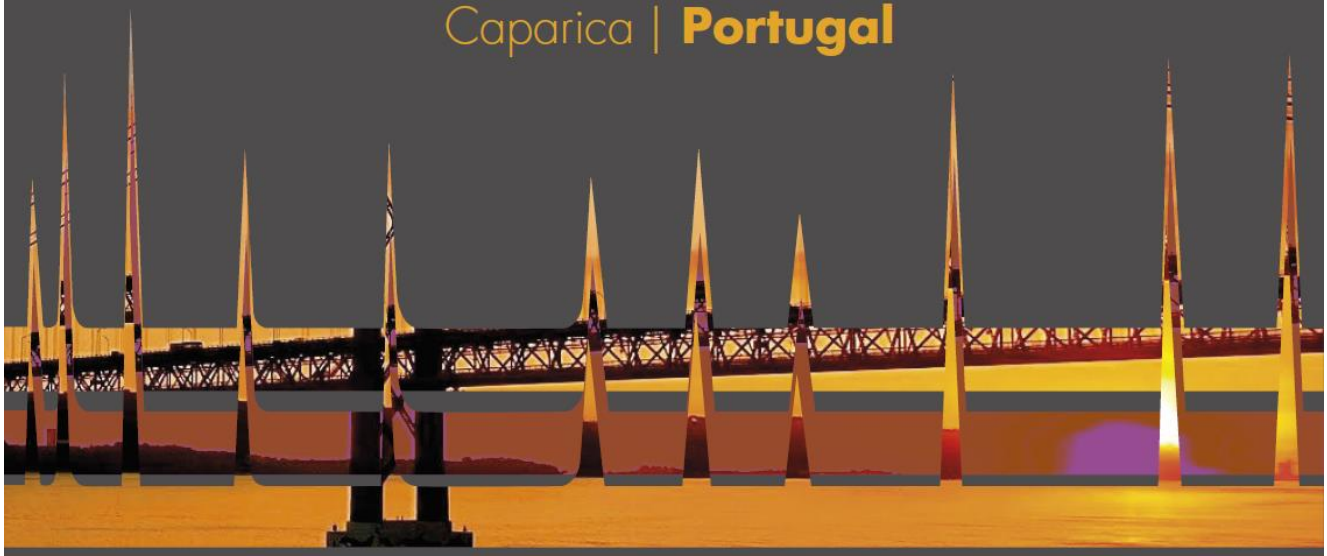

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# O17 Natural colorants in cookies: evaluation of the incorporation effects on the physico-chemical composition

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In order to respond to the industry's need for additives of natural origin, the exploration of new natural sources for different compounds has increased. Compounds with dyeing capacity are of great interest because, throughout the industrial processing of foods, they eventually see their initial color compromised.[1] Thus, it is necessary to add coloring compounds, preferably of natural origin, to meet the demands of consumers, who are aware of the harmful effects that are attributed to some food additives of artificial origin. The addition of a natural colorant to a particular food has several advantages, besides imparting color, it also enriches the food, due to its intrinsic biological benefits. Betacyanins, for instance, are pigmented compounds that have a powerful pink color, being quite abundant in *Gomphrena globosa* L. flowers, which have strong coloring ability, in addition to their high antioxidant and chemopreventive effects[2]. In the present work, betacyanins were obtained from purple-colored flowers of *G. globosa* by ultrasound assisted extraction (UAE) and were further submitted to stabilization processes. The obtained coloring formulations were incorporated in cookies and the influence of this incorporation in the chemical profile regarding fatty acids (GC-FID), sugars (HPLC-RI) and tocopherols (HPLC-fluorescence) of the cookies were evaluated along a shelf-life of 30 days. Furthermore, the cookies were also analyzed for their physical characteristics through the evaluation of the color using a colorimeter (D65 illuminant), analyzing the L*, a* and b* coordinates, where L* represents lightness, a* represents the redness and b* the yellowness. Texture was analyzed with a TA.XT texturometer, evaluating the effects on the hardness, adhesiveness, springness, cohesiveness, chewiness and resilience over the 30 days. Cookies with a commercial colorant and ones with no colorant were used as control samples. As expected, the natural colorants incorporation caused no significant differences among the chemical analyses of the cookies, as the definition of colorants implies that beyond the color imparting no other parameter of the food should be altered. In terms of the cookie profiles, the most abundant individual fatty acid was palmitic acid (C16:0), followed by oleic (C18:1) and linoleic acid (C18:2) contributing to the major prevalence of the saturated fatty acids (SFA), followed by the monounsaturated (MUFA) and polyunsaturated (PUFA) fatty acids. Sucrose was the only detected sugar and corresponded to $\approx 48.5 \pm 2.0$ g/100 g dw. Regarding the tocopherols, only three of the four isoforms were detected, namely α-, β-, and δ-tocopherol, being α-tocopherol the most abundant ($\approx 29.2 \pm 0.8$ mg/100 g dw), followed by δ-tocopherol ($\approx 8.0 \pm 0.8$ mg/100 g dw), and β-tocopherol ($\approx 2.0 \pm 0.2$ mg/100 g dw). Regarding the physical parameters, among the prepared formulations, the one stabilized by lyophilization presented a loss of the original color. Comparing the developed formulations with the pink commercial colorant, the natural ones showed a better pink color, since this commercial colorant displays a more reddish color, highlight the potential of the developed formulations as real pink colorants. Concerning the texture profile, no significant differences were verified between the samples over the shelf-life of 30 days, although hardness decreased due to retrogradation. The results demonstrated the strong potential of *G. globosa* as a promising source of betacyanins with a stable pink colour with high applicability in the food industry.

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