NEW DIPPING TREATMENTS TO CONTROL ENZYMATIC BROWNING OF APPLES DURING DRYING

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ABSTRACT
The present experimental activity aims to improve the quality of apple wedges (var. Golden delicious) during 8-h drying at 60°C, using dipping treatments in fruit juices (orange, pineapple, green kiwifruit, yellow kiwifruit) and/or herbal teas (green tea, dandelion, licorice, roselle). Preliminary tests allowed to select both pineapple and green kiwifruit juices as well as roselle (Hibiscus sabdariffa) dry extract as feasible pretreatments able to control enzymatic browning by reducing the polyphenol oxidase (PPO) activity. In fact, 70, 80 and 100% inhibition of PPO activity were achieved using green kiwifruit (5% v/v), pineapple (7.7% v/v) juices and roselle dry extract (1.5% w/v), respectively.

The selected fruit juices, alone and in combination with roselle, were finally tested as pretreatment of the 8-h drying process. Product quality was evaluated at 0, 2, 4, 6 and 8 h of drying by monitoring changes in color, moisture content (g/gDW), soluble solid contents (SSC), water activity (a_w) and total phenols content at (GAE/gDW). Dipping in both pineapple and kiwifruit juices avoids changes in color of apple wedges during the first 2 h of drying (i.e. product heating period) and allowed to obtain a final product with a 28% lower moisture content (0.16), as well as the highest SSC (7.41 °Brix) and total phenols content (354.70 GAE/gDW). Roselle dipping treatment substantially changed the hue angle of apple wedges to the crimson color, decreased the SSC (7.20 °Brix) and increased the total phenols content (> 415 GAE/gDW) of all samples. The best dipping treatment, in terms of final quality of the product, corresponded to the green kiwifruit juices, alone or in combination with roselle dry extract.

PAROLE CHIAVE: Golden delicious, dipping, drying, pineapple, kiwifruit, roselle