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The Thesis Submitted for the Degree of M.Sc (in the field of Food Science and Technology)

the effect of suger replacement with white berry concentrate on the physico-chemical and sensory properties of watermelon exocarp pastil

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Abstract:

Iran is one of the largest producers of watermelon in the world. Watermelon is mostly consumed fresh in most countries, and due to various reasons, including the lack of suitable processing methods for this product, a large amount of it is wasted in the production chain from farm to consumption. The purpose of this research was to investigate the possibility of producing new products from watermelon exocarp and white berry concentrate (Gummy candy or pastille based on watermelon exocarp) and optimizing its formulation. The pastille was produced from white berry concentrate, watermelon exocarp, a mixture of hydrocolloids (starch and gelatin), sweeteners, pH modifiers and other additives. Different percentages of exocarp at four levels of 0, 10, 20 and 30 (wt/wt) and white berry concentrate at four levels of 0, 30, 60 and 90% replacement with sugar as influencing factors on chemical properties (protein, fat, carbohydrate, moisture, antioxidant properties), texture profile (Gumminess, hardness, Chewiness), color parameters (a*, L* and b*), water activity and sensory properties of this product were investigated. The results showed that although the use of white berry concentrate compared to watermelon exocarp reduces carbohydrates and increases protein and moisture. However, the combination of watermelon exocarp with white berry concentrate leads to an increase in the nutritional value of pastilles by reducing carbohydrates, increasing protein, ash, fiber and moisture. The combined experimental groups also improved texture with a positive effect on hardness and reversibility. Sensory evaluation also showed that pastilles formulated with 90% white berry concentrate and 30% watermelon exocarp were more acceptable in terms of taste, color, texture and overall. In this research, it was found that the combination of watermelon exocarp and white berry concentrate leads to an increase in the nutritional, textural and sensory quality of pastille compared to the use of each one alone.

Keywords: white berry concentrate, watermelon exocarp, pastille, sensory characteristics, textural and chemical characteristics