APPLE POMACE - A FUNCTIONAL INGREDIENT IN THE MANUFACTURE OF NOVEL FOODS

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Apples are the most consumed fruits in the Republic of Moldova (RM). The National Bureau of Statistics of the RM reported that during the years 2015-2020 the annual production of apples increased from 308,000 tons to 480,400 tons. Apple fruits can be eaten fresh (approx. 75%) and the rest of the fruits can be processed into juices, preserves and dried products. When obtaining the apple juice, the pomace is obtained, which constitutes approx. 25% of the mass of processed fruits, presenting agro-industrial waste. Apple pomace is a mixture of skin, pulp, seeds and stems. It contains a variety of biologically active substances, especially insoluble sugars (cellulose, hemicellulose, lignin, pectin, etc.), simple sugars (glucose, fructose and galactose), polyphenolic compounds, minerals (P, Ca, Mg and Fe) and vitamins. Pomace is known for its benefits in preventing constipation and hypertension. Thus, apple pomace as a functional ingredient can be used in the manufacture of novel foods.

In bakery technology, apple pomace added to the manufacture of bread or pastries from wheat flour improves the content of dietary fiber. The addition of apple pomace positively influenced the sensory characteristics (smell, taste and texture of the core) and delayed staling progress of bakery products. In the case of muffins, the substitution of wheat flour with grape pomace up to 20% led to the accumulation of the highest score in the sensory analysis for color, taste and texture. Exceeding the concentration of pomace over 20%, influenced the sensory quality, as the color of the crust and core darkened from light yellow to brown. Also, apple pomace increased the biological value of the muffins, in particular the total polyphenol content, dietary fiber and antioxidant activity. The substitution of sugar with apple pomace in the technology of biscuit manufacturing, led to the reduction of the glycemic index from 70 to 60 c.u. In the confectionery industry, apple pomace is recommended in the manufacture of gelatinous products due to its high content of pectin and flavor compounds.

In meat manufacturing technology, apple pomace was used to improve the deficiency of meat dietary fiber. Content of moisture, fat and crude fiber had a significantly positive correlation with the level of replacing chicken meat with apple pomace. It has positively influenced the yield and textural properties, such as the firmness and hardness of the meatballs. Also, apple pomace changed the color of the finished meat products, being darker and improved the total dietary fiber content. In the milk processing industry, apple pomace was applied as a stabilizing and texture agent in the manufacture of yogurt. The addition of apple pomace powder in a concentration of 1% led to an increase in the pH of the gelling and a reduction in the fermentation time. As a result, a more viscous, consistent, and firmer yoghurt was obtained.

The incorporation of apple pomace in the formulation of novel foods will allow to obtain quality products, to improve the health of consumers and will solve the problem of recovering agro-industrial waste.

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