Streszczenie w języku angielskim

The study aimed to assess the possibility of using selected vegetables as matrices for iodine salts and establish schemes of fortification methods to maximize the efficiency of iodine application.

As a result of the survey, it was found that vegans are a group particularly vulnerable to iodine deficiency, due to the low consumption of iodized salt and dietary restrictions eliminating the most important, animal sources of iodine from the diet. It was determined that the vegan diet requires enrichment with iodine to ensure coverage of the recommended daily intake of this element.

Vegans' most commonly consumed vegetables were selected for further studies: pumpkin, broccoli, cauliflower, beetroot and carrot. The vegetables were impregnated with iodine using iodide (KI) and potassium iodate (KIO_3), which are standardly used to enrich table salt. It was found that the form of iodine applied (KI/KIO_3) affected its stability during the impregnation process and subsequent storage of the obtained dried vegetables. Potassium iodate (KIO_3) was more stable than potassium iodide (KI). Variable conditions of iodine impregnation (degree of hydration, temperature and process time) of the tested vegetables affected the reproducibility of iodine applied to them. The most favourable conditions of iodine impregnation of the tested preparations were determined, i.e. impregnation temperature –76°C, hydration degree 1:1 (m/v), as well as the least favourable conditions: temperature 4°C, soaking time 6 h at hydration 1:4 (m/v). Moreover, it was confirmed that the antioxidant activity based on $ABTS^{+}$ and DPPH was related to the level of iodine concentration (0.023 – 2.3 mg/100 g) in the system. Statistically significantly lower indices of the ability to capture free radicals ($ABTS^{\bullet+}$ and $DPPH^{\bullet}$) were confirmed in the systems containing iodine in the form of KIO3 at the level of 2.3 mg/100 g of the product.

Ciabatta rolls and Gnocchi dumplings were designed with the addition of dried vegetables fortified with iodine (KI and KIO_3). The analyses showed that the stability of iodine, thiamine and antioxidant indices ($ABTS^{\bullet+}$ and $DPPH^{\bullet}$) was higher compared to those enriched with iodine using iodized salt. The analysis of the coverage of the recommended daily allowance (RDA) of iodine showed that the designed cereal products can be a good source of iodine in the diet and can be used as an element of IDD prevention.

Key words: iodine, vegetables, food fortification, iodine prophylaxis, cereal products

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