NOODLES WITH SPICY-VEGETABLE RAW MATERIALS

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Introduction. A practical way to improve the nation's health is to enhance the population's dietary structure. This can be achieved by enriching products that are regularly consumed by all segments of the population with biologically active substances. Grain-based products are the most common items in the Ukrainian consumer basket. Pasta, in particular, falls into this category. It appeals to consumers due to its long shelf life combined with quick preparation –factors that are important given the modern pace of life.

The aim of the study was to produce ribbon-shaped artisanal pasta with enhanced nutritional value.

Materials and Methods. Red beetroot juice, added to the formulation in place of water, and the aromatic spice sumac were evaluated as enriching agents. Thus, a colored product was obtained, and color is a key consumer characteristic that attracts buyers. At the same time, the addition of sumac, which contains food acids such as malic, citric, and tartaric acids, helps lower the pH of the mixture. This aids in preserving the product's color, which is primarily due to the presence of betalains – compounds that remain stable within a pH range of 3.0 to 7.0. This is important because betalains possess specific biological activity, and red beet is the sole source of them in the diet of the population in our climatic zone. Furthermore, sumac imparts a pleasant aroma and flavor to the product, masking the characteristic taste of beetroot.

The amount of sumac incorporated into the noodle formulation ranged from 1% to 5%. The resulting samples were dried to a moisture content specified for instant products, with the aim of maximizing the retention of biologically active components – derived from the added plant-based raw material, that are sensitive to high-temperature processing. A noodle sample without the addition of spice-vegetable ingredients served as the control. Organoleptic evaluation of the resulting products was conducted using descriptors such as appearance and surface condition, shape, color, taste and aroma, and the condition of the products after cooking. The results led to the conclusion that the experimental samples outperformed the control sample. The best among them was the sample containing 2% sumac.

Results and Discussion. Compared to the control sample, the noodles with beetroot and sumac were more elastic; the product retained its shape after cooking and had a soft, tender texture; the color was preserved, although it became somewhat lighter; and the noodles possessed the characteristic taste of flour-based products along with a pleasant aroma of spices. A comparison of the physicochemical properties of the control sample and the sample with added spice-vegetable ingredients demonstrated that the experimental sample outperformed the control in terms of the mass increase coefficient during cooking (1.98 vs. 1.63), acidity (2.6 vs. 0.6 °T). There was virtually no difference in moisture content between the samples. The biological activity of both types of additives – beetroot juice and sumac– is an integral value derived from a range of diverse substances present in the raw materials. Therefore, it was appropriate to compare the biological activity of the samples by measuring the reaction rate involving the coenzyme nicotinamide adenine dinucleotide (NAD). In terms of this indicator, the noodles with the added spice-and-vegetable supplement significantly outperform the control sample – 1.44 versus 0.82 arbitrary units, respectively.

Conclusion. Thus, the addition of spice and vegetable ingredients - beetroot juice and sumac - to craft noodles is advisable, enriches them with biologically active substances and makes them more appealing to consumers by improving their sensory characteristics.

Keywords: *pasta, beetroot, sumac, biological activity*