THE REDUCTION OF CONTAMINATION OF BAKERY PRODUCTS WITH BACILLUS SUBTILIS

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Wheat bread is a popular food in the bakery category. Wheat flour is the most used raw material for this product, but a major problem in the bread industry arises due to the use of flour contaminated with sporulation bacteria from the genus *Bacillus*, namely *Bacillus subtilis* [1]. Their activity negatively changes the quality of the bread, and their action can take place either in the dough or after baking, due to the heat-resistant endospores that they form, thus, during bread storage, they cause diseases by degrading the starch and proteins in the core [2]. The purpose of the research was to study the impact of the addition of vegetable powders from sea buckthorn berries on the pathogenic microflora *Bacillus subtilis* and the baking conditions on the proliferation of these pathogenic microorganisms, in order to reduce the risk of the development of rope spoilage in bakery products. Under this aspect, the bread was made from wheat flour of the second quality with the addition of vegetable powders from sea buckthorn berries with concentrations of 1%, 2%, 3%, according to the classic recipe, by the biphasic method, based on sourdough liquid salty. The microbiostatic and microbicidal effect of vegetable powders from sea buckthorn berries in direct contact with *Bacillus subtilis* was determined *in vitro*. The physico-chemical quality properties of the finished product were analyzed: the volume of the bread; porosity; acidity; humidity; the chromatic and sensory parameters of the bread core (color, taste, smell, appearance, consistency). The degree of *Bacillus* contamination was determined by the baking test. It was found that the optimal concentration of vegetable powder from sea buckthorn berries is 2%, which was also confirmed by the physical-chemical analyzes that are in accordance with normative documents in force. It was found that an addition of vegetable powder from sea buckthorn berries with a concentration of 2% added to the mass of flour has a bacteriostatic effect on the spores of *Bacillus* microorganisms, inhibiting their development, thus reducing the risk of being affected by rope spoilage for up to 96 hours. It was observed that in the control sample and 1% addition of vegetable powder from sea buckthorn berries, the first signs of the wilt disease appeared after 72 h, manifested by the appearance of small spots on the surface of the peel and the presence of a slightly unpleasant smell. In the following 24 h, symptoms intensified for the control sample and 1% addition of vegetable powder from sea buckthorn berries, and in the 3% sample, these symptoms were not identified. Through the obtained determinations, the use of vegetable powder from sea buckthorn berries in the manufacture of bakery products for the prevention of rope spoilage was demonstrated and justified.

Keywords: bacillus subtilis, bread, rope spoilage, vegetable powder

References:

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