

INFLUENCE OF CAROTENOID CONTENT IN SEA BUCKTHORN POWDER ON *BACILLUS SUBTILIS* INHIBITATION

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Sea buckthorn is an important source of biologically active compounds with antimicrobial effect. The aim of the study was to investigate the influence of total carotenoid content in sea buckthorn powder on pathogenic bacteria *Bacillus subtilis*. The antimicrobial effect of the sea buckthorn powders was determined *in vitro* on pathogenic microorganisms *Bacillus subtilis* ATCC 6633, which can cause ropiness in bread products from wheat flour. Were researched 10 local sea buckthorn varieties: C6, R1, R2, R4, R5, AGA, AGG, Mr. Sandu, Seirola and Pomeranskaia (*Hippophae rhamnoides* L.). The total carotenoid content of these varieties was also determined. The total carotenoid content of the analyzed varieties varies in the range of 0.34 mg/100 g. to 2.09 ± 0.03 mg/100 g. It was found that the values of the total carotenoid content in powders decrease in the following order: R1>Seirola>Pomeranskaia>Mr.Sandu>R5>R4>AGG>C6>R2>AGA. The carotenoid content determined in the R1 variety is 6.1 times higher than the AGA variety. Sea buckthorn powders showed a pronounced antimicrobial activity that constitutes a range between 19 and 29 mm in diameter of the inhibition zone and decreases in the order: AGA>AGG>Mr.Sandu>C6>Seirola>R5>R4>R2>Pomeranskaia>R1. As a result of the tests performed, it was found that the AGA variety achieves a more pronounced antimicrobial activity than *Bacillus subtilis*, which is 29 mm in diameter of the inhibition zone, and a weaker antibacterial effect is denoted in powder R1 with 19 mm in diameter. It has been established that the correlation between the total carotenoid content and the antimicrobial activity is $R^2=0.31$. The inhibitory effect on *Bacillus subtilis* is probably due to other bioactive compounds such as flavonoids. Bibliographic sources show that flavonoids, due to the -OH groups, tend to be incorporated into the membrane and cell wall of pathogenic microorganisms, thus changing their fluidity, permeability and lead to weakening of the membrane potential, contributing to the death of microbial cells.

Keywords: sea buckthorn, carotenoids, antimicrobial activity, *Bacillus subtilis*

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