

ANTIMICROBIAL ACTIVITY OF SEA BUCKTHORN POWDER AGAINST FOUR PATHOGENIC BACTERIA STRAINS

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Plants present a source of natural antimicrobial agents. Plant bioactive molecules can interact with organisms in their environment and can act against pathogenic microorganisms.

In this present study, sea buckthorn powder was investigated against four pathogenic bacteria strains: *Bacillus subtilis* ATCC 6633, *Staphylococcus aureus* ATCC 25923, *Escherichia coli* ATCC 25922 and *Klebsiella pneumoniae* ATCC 13883. The chemical composition and antiradical activity of the hydroalcoholic and liposoluble sea buckthorn extracts were investigated. The hydroalcoholic extract of sea buckthorn contained polyphenols 9.34±0.65 mg GAE/g, tannins 27.72±1.25 mg TAE/g and the antiradical activity was 93.65±2.17 % of inhibited DPPH. The liposoluble extract of sea buckthorn has contained β-carotene 7.20±0.32 mg/L, lycopene 7.37±0.18 mg/L and the antiradical activity was 68.07 ± 3.72% of inhibited DPPH.

The sea buckthorn powder showed an antimicrobial activity pronounced against *Staphylococcus aureus* and *Bacillus subtilis*. In the case of *Escherichia coli* and *Klebsiella pneumoniae* antimicrobial activity of plant powder was low. The sea buckthorn powder showed the inhibitory activity against pathogenic bacteria strains in the following series: *Staphylococcus aureus*>*Bacillus subtilis*>*Escherichia coli*>*Klebsiella pneumoniae*. This phenomenon is explained by the fact that *Staphylococcus aureus* and *Bacillus subtilis* are Gram-positive bacteria and *Escherichia coli* and *Klebsiella pneumoniae* - Gram-negative bacteria. Thus, Gram-positive bacteria are more sensitive to the action of sea buckthorn powder than Gram-negative bacteria. It was found that a 1.0% addition of sea buckthorn powder reduced the risk of appearance of ropiness in wheat flour bread caused by *Bacillus subtilis*.

The investigated sea buckthorn powder has shown promising antimicrobial potential against pathogenic microorganisms and can be used in the food industry.

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