

THE POTENTIAL OF BERRIES TO SERVE AS SELECTIVE INHIBITORS OF PATHOGENS AND THEIR BENEFITS ON HEALTH

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Introduction. Due to the current fast pace of life, and the profit oriented industries which minimize production and distribution costs by using preservatives, additives, antibiotics, hormones, and people eat a lot of fast food and quick meals, their health is often severely affected and the general population immunity is much more weakened. Currently 75% of all diseases are consequence of unhealthy diets, food habits and life style that cannot compensate for the harmful elements in our food. Therefore, the trend of organic food has been growing more and more over the past decades. In this context, coming up with reliable natural alternatives to the synthetic compounds is imperative. This is why the project aims to study the antimicrobial effect of biological extracts from berries – Rosehip, white sea buckthorn, hawthorn and aronia – on microorganisms responsible for food alteration.

Material and methods. The berries have been selected for research. All plant materials come from the Republic of Moldova. As a plant (berries) with antibacterial activity were used the following extract from sea buckthorn, mountain ash, hawthorn, aronia and rose hip, grape marc. The bacterial strains used as test organisms are *S. aureus* ATCC 25923, *E. coli* ATCC 25922, *L. monocytogenes* ATCC 19118, *S. Aboni*, *K. pneumoniae* ATCC 13883. Antimicrobial activity was screened by an agar well diffusion method and bacterial growth was measured in liquid culture. For determination of MIC and MBC was done dilution technique, spectrophotometric method.

Results. It has been demonstrated that the lowest inhibitory and bactericidal concentration on *S. aureus* is found in white sea buckthorn powders, with the diameter of inhibition zone 22 mm, followed by rosehip groats and grape marc, the diameter being 16mm. In the case of *E. coli* and *K. pneumoniae*, only white sea buckthorn powder showed minimal inhibitory and bactericidal concentrations. According to the obtained data, we noticed that sea buckthorn has the most pronounced effect on tested bacteria. It was determined MIC and the lowest concentration was for sea buckthorn 1,95 mg/mL for *S. aureus*. In case of rosehip the MIC was 3,91 mg/mL.

Conclusions. The antimicrobial activity varies widely, depending on the type of plants, type of medium and on species of bacteria. Microorganisms differ in their resistance to a given plant extracts. Gram negative bacteria are more resistant than Gram positive. However, the addition of plant extracts can be expected to aid in preserving food held at refrigeration temperature, at which the multiplication of microorganisms is slow.

Keywords: *antibacterial, diffusion method, plant extract, spectrophotometric*

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