

## APPLYING OF INFORMATION ANALYSIS OF EXPERIMENTAL DATA TO OPTIMIZE THE EXTRACTION OF BIOACTIVE COMPOUNDS FROM BERRIES\*

Ghendov-Mosanu Aliona<sup>1</sup>, Sturza Rodica<sup>1</sup>, Chereches Tudor<sup>2</sup>, Patras Antoanela<sup>3</sup>

<sup>1</sup>Technical University of Moldova, Chisinau, Republic of Moldova

<sup>2</sup>UPS PILOT ARM LTD, Bucharest, Romania

<sup>3</sup>"Ion Ionescu de la Brad" University of Agricultural Sciences and Veterinary Medicine, Iasi, Romania

Ghendov-Moșanu Aliona, aliona.mosanu@tpa.utm.md

**Abstract:** The informational analysis of the experimental data allows determining the influences between the different experimental parameters and is based on two main concepts: entropy and information. Information is the fundamental concept in prediction, and entropy characterizes uncertainty in the occurrence of an event. Mutual information provides the quantitative measure of reducing uncertainty, thus increasing prediction. The more mutual information has higher values, the lesser the uncertainties and hence the higher predictions [1]. In information theory, the unit of measure of information and entropy is the bit.

The aim of the research is to determine the influence of the ethyl alcohol concentration of the extracts from white sea buckthorn and dog rose (20, 40, 50, 60, 80 %) on the measured parameters: antioxidant activity of the hydrosoluble substances, antioxidant activity of the liposoluble substances, total polyphenol index; antiradical activity, DPPH, in the acid medium, antiradical activity, DPPH, in the alkali medium.

It was found that in both white sea buckthorn and dog rose, the concentration of ethyl alcohol influences to the highest degree the total polyphenols index ( $I = 0.82$  bits in white sea buckthorn and  $I = 0.54$  bits per dog rose). Also, in white sea buckthorn, the concentration of ethyl alcohol influences to the smallest extent the antioxidant activity of liposoluble substances ( $I = 0.17$  bits), and in the dog rose, the concentration of ethyl alcohol influences to the least extent the antiradical activity in the acid medium and activity antiradical in the alkali medium ( $I = 0.37$  bits). Thus, in the case of the dog rose, the values of the mutual information are less dispersed (maximum / minimum ratio of 1.46) than the white sea buckthorn (maximum / minimum ratio of 4.82), this means that in the case of the dog rose, the concentration of ethyl alcohol influences the measured parameters more evenly than to the white sea buckthorn.

*\*This work was benefited from support through the 16.80013.5107.22/Ro project, "The substitution of synthetic food additives with bioactive components extracted from natural renewable resources".*

### References

1. Peng H., Long F., Ding C. Feature selection based on mutual information: criteria of max-dependency, max-relevance, and min-redundancy. *IEEE Trans Pattern Anal Mach Intell.*, 2005, 27(8), 1226-38.