

SUMMARY

of the doctoral thesis entitled:

RECOVERY OF VEGETABLE WASTE FROM THE FOOD INDUSTRY BY PRODUCING SOME PRODUCTS WITH HIGH NUTRITIONAL VALUE AND ANTIOXIDANT CAPACITY

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The doctoral thesis, entitled "**Recovery of vegetable waste from the food industry by producing some products with high nutritional value and antioxidant capacity**" is structured in two parts: **Part I. The current state of knowledge** and **Part II. Own research**. These two parts are preceded by the **Introduction**, and at the end of the doctoral thesis the **general conclusions** and **recommendations** are presented. This work includes **7 chapters, 73 tables and 121 figures, a list of 162 up-to-date bibliographic references** for the field addressed. Also in the thesis is included the list of scientific papers published during the doctoral studies, in the scientific field addressed in this paper.

The summary briefly presents the content of the chapters from the original part of the work. The numbering of chapters, subchapters, figures, tables and bibliographic references correspond to those in the thesis.

Part I **The current state of knowledge** is presented in **Chapter I** entitled "**Waste and vegetable by-products from the food industry with the potential for valorization, for the fortification of food products, in order to increase the nutritional value and antioxidant potential**" where tomato, apple waste and wine by-products and their biochemical composition, antioxidant potential and beneficial effects on health are presented. The study carried out revealed that these vegetable waste and by-products have a complex biochemical composition and exhibit antioxidant capacity, having beneficial effects on the human body (anti-cancer effects, anti-inflammatory effects, antibacterial effects, prevention of diseases caused by oxidative stress, reduction of LDL cholesterol levels, etc.). Documentation study highlighted the high potential for valorization of vegetable waste and by-products from the wine industry, through the creation of functional ingredients (powders, extracts, etc.) to be used in the food fortification process, in order to increase the nutritional value and antioxidant capacity of them.

In **Chapter II** entitled "**The purpose and objectives of the research, materials and methods used**" the objectives of the doctoral thesis are presented, as well as the materials and methods of analysis used to achieve them. The main objective of this work was the superior valorization of wine residues and some vegetable waste (tomatoes, apples) in order to obtain functional ingredients with a complex biochemical composition and antioxidant potential, which can be used in the food fortification process. For the qualitative characterization of the functional ingredients obtained and the products fortified with them, appropriate analytical methods, standardized or developed and validated in the laboratory, were used.

In **Chapter III** entitled "**Experiments regarding the processing of vegetable waste and wine by-products in order to obtain some functional ingredients (flours)**", the results of the experiments undertaken to obtain functional ingredients through capitalization of tomato waste, apple waste and by-products resulting from the wine industry are presented. The functional ingredients obtained in the form of powders (flours), were stable from a qualitative point of view.

In **Chapter IV** entitled "**Analysis of the quality of functional ingredients (flours) obtained from vegetable waste and wine by-products**" are presented the results obtained after qualitative characterization (sensory, physico-chemical, microbiological, bioactive compounds content, antioxidant capacity) of the functional ingredients obtained from experiments. The analyzes carried out revealed that functional ingredients stand out for their content in mineral elements, total fibers, sugars, bioactive compounds (polyphenols, β -carotene, lycopene) and exhibit antioxidant capacity.

In **Chapter V** entitled "**Experiments at the laboratory level to obtain bakery and pastry products fortified with functional ingredients obtained from vegetable waste and wine by-products**", the results of the experiments undertaken to obtain bakery products (pasta, bread, appetizer biscuits) are presented and pastries (muffins, cookies) fortified with functional ingredients (flours) made through own research and experimentation.

In **Chapter VI** entitled "**Analysis of the quality of fortified products with functional ingredients from vegetable waste and wine by-products**" the results of the qualitative characterization (sensory, physico-chemical, microbiological, bioactive compounds content, antioxidant capacity) of bakery products (pasta, bread, aperitif biscuits) and pastries (muffins, cookies) fortified with the functional ingredients (flours). The analyzes carried out revealed that these products stand out for their content in mineral elements, total fibers, bioactive compounds (polyphenols, β -carotene, lycopene).

In **Chapter VII** entitled "**General conclusions and recommendations**" are presented the main conclusions from own research and recommendations to the main users of this research (economic agents whose activity results in vegetable waste/wine by-products, on one hand and consumers interested in a healthy diet, as well as consumers with nutritional deficiencies and/or diseases determined by oxidative stress, on the other hand).