SUMMARY

of the doctoral thesis entitled:

THE DEVELOPMENT OF SOME HYPOGLUCIDIC FOOD PRODUCTS WITH ANTIOXIDANT POTENTIAL, FOR THE DIABETIC DIET

PhD-student: **Lazăr Anda-Grațiela**
Scientific coordinator: **Prof. Univ. Dr. Teodorescu Răzvan Ionuț**

KEYWORDS: diabetes, diet, Jerusalem artichoke, hypoglycemic products, antioxidant potential

The doctoral thesis ***"The development of some hypoglucidic food products with antioxidant potential, for the diabetic diet"*** 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. The work includes **7 chapters**, **61 tables and 106 figures, a list of 127 up-to-date bibliographic references** for the field addressed. Also, a list of scientific papers published during the doctoral studies is presented in the thesis.

This summary presents in a succinct form 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 include 2 chapters as follows: **Chapter I - "*Diabetes mellitus, incidence, causes, prevention and diet therapy***" and **Chapter II - "*Food products intended for the diabetic diet, existing nationally and internationally***". In **Chapter I**, the incidence of diabetes at the national and international level, the causes of the appearance of this disease, as well as the importance of diet and antioxidants in the prevention and diet therapy of diabetes are presented. In **Chapter II** are presented the results of research undertaken at national and international level regarding the valorization of Jerusalem artichoke (*Helianthus tuberosus*) by making functional ingredients and food products for the diabetic diet.

In the **Chapter III** entitled ***"The purpose and objectives of the research, materials and methods used"*** presents the objectives of the doctoral thesis, as well as the materials and methods of analysis used. The main objective of the work was the utilization of Jerusalem artichoke tubers (*Helianthus tuberosus* L.) in order to create hypoglycemic food products, with antioxidant potential, for the diabetic diet. The methods used for the characterization of the functional ingredient from the Jerusalem artichoke tuber and food products for diabetics are appropriate analytical methods, either standardized or developed in the laboratory and validated "*in house*".

In the **Chapter IV** are presented the results of the experiments performed for obtaing functional ingredients (powder) by valorification of Jerusalem artichoke tubers.

This functional ingredient has a complex biochemical composition, notable for its content in proteins, ash, mineral elements (K, Ca, Mg, Fe, P), crude fibers, polyphenols, inulin and has antioxidant capacity.

In the **Chapter V** - ***"Research on obtaining hypoglycemic bakery products with antioxidant potential for the diet of diabetics"*** are the results of the experiments undertaken fot the qualitative characterization (sensory, physico-chemical, microbiological, total polyphenol content, antioxidant capacity) of a natural fermentation agent - "Natural sourdough enriched in phenolic compounds and inulin" and the "Hypoglycemic bread with antioxidant potential" and "Hypoglycemic stick bread that has antioxidant potential", suitable for the diet of diabetics. The analysis revealed that the natural fermentation agent stands out for its content in total ash, total polyphenols, inulin, antioxidant capacity, yeasts and lactic bacteria. Also, the qualitative analysis of the two bakery products intended for diabetics revealed that they have a low carbohydrate content and stand out for their ash, protein, total fiber content and microelements (K, Ca, Mg, Fe, Zn, Cu).

Chapter VI show the results of the experiments undertaken for the production and qualitative characterization of some jams made with apple and Jerusalem artichoke tubers, suitable for the diet of diabetics. The experiments carried out revealed that these products have a low content of sugars and stand out for their content in inulin, polyphenols, crude fibers and exhibit antioxidant capacity. Also, this chapter presents the results of the research undertaken for the realisation and qualitative characterization of a pastry product for diabetics, which contains jam made with apple and Jerusalem artichoke tubers that is hypoglycemic and has antioxidant potential.

In the last **Chapter VII** entitled ***"General conclusions and recommendations"*** are presented the main conclusions resulting from own research and recommendations to the main users of this research such as farmers who cultivate Jerusalem artichoke (*Helianthus tuberosus* L.) and economic agents interested in the manufacture of food products for diabetics and for people suffering at risk of developing this disease.