Full title of the project: OBTAINING SOME PLANT PREPARATIONS WITH A PROPHYLACTIC ROLE IN SOME CARDIOVASCULAR CONDITIONS

Acronym: CARDIOFIT

Project Summary:
The project qualifies for the topical area 5.1.6 – Functional food products to maintain people's health and prevent them from contracting diseases.
The goal of the project is to obtain some plant preparations aimed at the prophylaxis of cardiovascular conditions.
The degree of novelty resides in obtaining some complex associations based on both their original composition (e.g. beta-glucans anthocianosides, polyphenol-carboxylic acids, sulphur volatile compounds) and their pharmacological action (e.g. lowering blood pressure, cholesterol and lipid-lowering properties, venotonic, vasoprotector and antioxidant) based on domestic cereal grains, and medicinal plants.
This research owes its complexity to the wide array of issues it addresses. From among these issues we quote the complex processing of medicinal plants (solutions to value, from a complex viewpoint, plant-derived waste such as compost); the design of modern and selective extracting technologies (identifying and assessing the negative impact on the environment as well as the design of an environmental management plan); the plant preparations obtained will be characterised from multiple angles: physical and chemical (HPTLC, gas-chromatography, densitometry), microbiological, cytotoxicological (on plant cell), and pharmacological. We also aim at applying some original methods to extract and condition the active principles from *Allium ursinum* (wild garlic), *Sorbus aucuparia* (rowan), *Avena sativa* (oat), and *Cynara scolymus* (artichoke), such domestic species scarcely or incompletely valued in Romania. The technologies designed will be environmentally friendly, non-pollutant, and they will include possibilities to value plant waste as compost to grow mushrooms or as fodder.
Intermediate products resulting in the process may be used as standard extracts in various functional food products and in nutritional supplements, e.g. solutions, tablets, capsules. They will comply with EU requirements and they will target an increasingly larger market share, people prone to cardiovascular conditions, overweight, the elderly, people working under extreme conditions that may cause cardiovascular conditions.

General Objectives

- to increase the competitive character of research in the field specific to the topic carried out within the partnership of a national research institute, a university, and an economic entity, able to implement the results immediately. The partnerships provides for a multidisciplinary expertise, e.g. chemistry, biology, pharmacy, physics, engineering;

Specific Objectives

- to enhance research competence and infrastructure within a consortium operating within the national economy;
- to lay the grounds for the integration of the consortium within the European research and technological platforms;
- to support the development of human and material resources of integrated networks of specialised institutions with a view to securing scientific, technical, and availability of facilities required by the development of a scientific and technological field which is to include national research and development institutes, universities, and small and medium-sized enterprises;

- to increase the quality and competitiveness of Romanian bio-products on the domestic and foreign markets as well as to adjust production to market requirements;
- to make the use of plant resources more efficient;
- to enhance the capacity of economic units to absorb and assimilate the results of research and development activity;

Derived Objectives:

- to optimise methods of preventing diseases, the development of medical therapies;
- to make the public health system more efficient;
- to increase food and nutritional safety.

Expected Results

- a documentary study on the phytochemical characterisation of medicinal plants and the evaluation of the bioactive principles potentially efficient in the prophylaxis of cardiovascular conditions;
- a laboratory study on obtaining and characterising from a physical, chemical, microbiological, biological, and pharmacological points of view of the extractive fractions responsible for the pharmacological activity;
- technologies to obtain four standardised extractive fractions;
- conditioning technologies for two end products ;
- three types of biological preparation having prophylactic potential in cardiovascular conditions;
- the investigation report on pharmacological actions;
- the technical documentation of the products manufacture.

Coordinating Entity:

S.C. Centrul de Cercetare si Prelucrare Plante Medicinale PLANTAVOREL S.A.
Code 610019, Cuza Voda No 46, PIATRA NEAMT, County of Neamt, ROMANIA
Phone/Fax: 40-(0)233/210308, Phone: 40-(0)233/210432;
E-mail: plv@plantavorel.ro, www.plantavorel.ro

Members of the Consortium

1. Project Coordinator – S.C. Centrul de Cercetare si Prelucrare Plante Medicinale "PLANTAVOREL" S.A. – Piatra Neamt;
2. PARTNER 1 – Institutul National de Cercetare Dezvoltare Stiinte Biologice – Bucuresti / Centrul de Cercetari Biologice "STEJARUL" – Piatra Neamt;
3. PARTNER 2- Universitatea de Medicina si Farmacie "Gr. T. Popa" Iasi.

Contracting Authority

PROGRAMME MANAGEMENT NATIONAL CENTRE – CNMP

Duration of the Project: 36 months.

Partners' Activities and responsibilities:

PROJECT MANAGER C0 (PLV)

Technical - scientific Responsibilities

- to conduct documentary research with concern to plants and active principles that have properties such as blood pressure-lowering properties, vasoprotector, anti-oxidant, cholesterol and lipid-lowering;
- to conduct qualitative and quantitative phytochemical screening of the plant species selected (i.e. *Avena sativa, Cynara scolymus, Sorbus aucuparia, Allium ursinum*) –

identifying and dosing flavones, polyphenol-carboxylic acids, amino acids, pro-anthocians, anthocians, etc.

- to perform lab experiments with a view to determining the selective extracting conditions for the main classes of active principles (e.g. polysaccharides, sulphur organic compounds, polyphenol compounds, etc.);
- to obtain extractive fractions at the lab stage ;
- to characterise the extractive fractions from a physical, chemical, and microbiological point of view;
- to design the technology for obtaining the extractive fractions;
- to obtain standardised extracts at pilot stage;
- to draft the technical specifications for the plant products and extracts obtained;
- to design the association formulae of the standardised selective extracts;
- to obtain the plant preparations (e.g. tablets, capsules, solutions)
- to draft the technical documentation of the plant preparations manufacture.

Administrative responsibilities

- to provide the project management throughout the duration of the contract;
- to establish, with the partners' agreement, the plans to carry out the project and the partners' responsibilities;
- to provide the material basis (e.g. labs, equipment, reactive substances) for carrying out their own activities;
- to provide the appropriately qualified staff for multiple sectors and multi- and interdisciplinary research;
- to perform and monitor the observance of contract obligations for each step and stage of the project, both for their own research team and for the partners' staff;
- to ensure efficient and operative communication of administrative and technical issues ;
- to monitor the performance of activities planned;
- to involve in the partners' problem solving with a view to the good performance of complementary investigations;
- to keep and secure the confidentiality of the data obtained during research, outside the partnership's framework, until the public release of results;
- to inform members of the partnership, on a permanent basis, on the results achieved by each research team, conditioning the design of new investigating directions or redirecting research according to the results recorded at each working step and stage, with a view to fully achieving the objectives set;
- to inform the partners on the contracting authority's opinions and decisions;
- to provide the centralised documentation in order to monitor the results by referring further, upon each stage, each partner's research and experimenting reports;
- to monitor the documentation, the data analysis, the methodological improvement of the partners' working teams members;
- to perform and control research-development results being valued by means of specific forms (drafting scientific papers in order to communicate and publish such results and their dissemination CD-Rom support;
- to provide from their own sources the funds and activities appropriate to the funding quota;
- to report on Co-funding throughout all stages it is provided, i.e. breakdown of its structure, by activities, destinations, and expenditure categories;

- to provide appropriate justifying documents of Co-funding;
- to propose to the contracting authority any amendments. i.e. from the category under the contract, required during the development of the project;
- to analyse objectively, together with the partners, whether they should carry on the research in case there are proposals for new projects;
- to monitor booking of activities concerning the performance of the obligations under the contract, filling in due documentation.

PARTNER 1 – P1 (CCB)

Technical – scientific responsibilities

- qualitative and quantitative phytochemical screening of the plant species selected**,** i.e. *Avena sativa, Cynara scolymus, Sorbus aucuparia, Allium ursinum* – identifying and dosing flavones, polyphenol-carboxylic acids, amino acids, pro-anthocians, anthocians, identifying sterol and alkaloid compounds;
- phytobiological characterisation (e.g. cytogenesis, cytotoxicity) of the plant products and of the plant preparations;
- designing the methods to obtain and characterise the extractive fractions;
- checking physical and chemical characteristics of the plant preparations;

Administrative responsibilities

- to secure the documentation required to draft the research project and takes part in devising the development plan thereof;
- to determine the experimental protocol and the working team necessary to fulfil the assignments undertaken within the partnership;
- to carry out the obligations under the contract – step by step and stage by stage as provided for in the research project – and meets deadlines thereof;
- to inform the project coordinator on the development of the activities, on the results obtained throughout each stage, and on the problems encountered during the studies;
- to keep and secure the confidentiality of the data gathered during the development of the research;
- to secure the communication, publication, and dissemination of the results recorded during the investigations conducted;
- to monitor the bookkeeping procedures with respect to observing the obligations under the contract and prepare the documents/books for monitoring;

PARTNER 2 – P2 (UMF)

Technical – scientific responsibilities

- to conduct documentary research concerning plants and active principles acting on lowering blood pressure, as vasoprotector, anti-oxidant, or acting on reducing cholesterol and lipid concentrations;
- to conduct qualitative and quantitative phytochemical screening of the plant species selected**,** i.e. *Avena sativa, Cynara scolymus, Sorbus aucuparia, Allium ursinum* – identifying and dosing polysaccharides, sulphur-based organic compounds and other active principles of therapeutic interest as well;

- to conduct lab experiments with a view to determine the conditions to selectively extract the main active principle classes, e.g. polysaccharides, sulphur-based organic compounds, and polyphenol compounds;
- to conduct *in vitro* screening of the anti-oxidizing action and the study of lipid and cholesterol-lowering properties of the extractive fractions;
- to investigate the biological action of the compound extracts, i.e. testing anti-oxidizing action, and testing their effects at vascular level;
- to check the physical and chemical and biological properties of the plant preparations;

Administrative responsibilities

- to provide the documentation necessary to draft the research project and to take part in the design of the development plan thereof;
- to establish the experimental protocol and the working team necessary to carrying out the assignments undertaken to within the partnership;
- to carry out the obligations under the contract – step by step and stage by stage as provided for in the research project – and to meet deadlines thereof;
- to inform the project coordinator on the development of the activities, with results obtained throughout each stage, and on the problems encountered during the studies;
- to keep and secure the confidentiality of the data gathered during the development of the research;

Description/presentation of various events carried out within the project

Links to various other web pages of interest to visitors

- information gathered as a result of the research;
- to secure communication, publication, and dissemination of the results recorded in the investigations conducted;
- to monitor bookkeeping of parameters bearing on the obligations under the contract and to draft documents for monitoring;

Project Budget: 2,330,100 lei, of which 2,000,000 lei funded by the Budget and the balance, i.e. 330,100 lei secured via Co-funding by www.umfiasi.ro
www.dbioro.eu

Contact Details for the Project Director

Mrs Mihailescu Roxana, engineer
Phone: 0233 210432; Phone/fax: 0233 210308;
E-mail : roxanamihailescu@yahoo.com; roxana@plantavorel.ro