Phytochemical and biotechnological studies and evaluation of biological activity of magnolia vine species – *Schisandra rubriflora*

According to the Scientific European Association of Phytotherapy, *herbal medicine, herbal drug, natural medicine, natural drug, phytomedicine* are considered to be medical products or drugs. Their active ingredients originate from the medicinal plants, in particular, from the parts or substances derived therefrom, or combinations of these in the processed form.

The herbal drugs are the most commonly preferred products by patients in drugstores. They are regarded as both, safe and effective. It should be noticed that herbal drug is recognized as the base of the modern pharmacology. The natural compounds, their chemical structure, are the inspiration for the design of synthetic drugs. However, the uniqueness of the structures synthesized by plants is not to be falsified even by experienced chemists. A herbal remedy has been and forever will be irreplaceable and unique. That's why it is so important to discover new plants of great medicinal importance.

The studies undertaken within the project, are **focused on better familiarization with magnolia vine – *Schisandra rubriflora*.** The goal of this project is to get the **new knowledge of chemical composition, biotechnological solutions and biological activity of *Schisandra rubriflora***. There are unique secondary metabolites – dibenzocyclooctadiene lignans synthesized, in this derived from the Chinese medicinal plant species. These compounds show wide range of crucial, scientifically proven, biological activities, e.g. hepatoregenrative, anticancer or immunostimulatory, as well as the minor ones, e.g. antioxidant, antiphlogistic, antimicrobial.

The research will **give the response to the hypothesis about competitiveness of the *Schisandra rubriflora* species in relations to *Schisandra chinensis*** (Chinese magnolia vine) - species approved as herbal drug according to Polish Pharmacopoeia X, European Pharmacopoeia 9th and Pharmacopoeia Internationalis of WHO.

In the framework of the project, the researches on chemical composition of *Schisandra rubriflora* species, based on chromatographic method, will be performed. **The chemical composition of fruits, leaves and shoots of *Schisandra rubriflora* grown in Poland will be elucidated. The research will include both the male and female specimens.**

Under the project the studies of **plant biotechnology** science will be performed. Plant biotechnology is an important direction of biotechnological science, which from the pharmaceutical point of view, creates unique opportunities to use in vitro cultures methods in obtaining of secondary metabolites with the therapeutic values. The method of in vitro cultivation of male and female lines will be elucidated. The optimisation of in vitro cultures maintaining will be elaborated in order to increase the content of secondary metabolites.

The evaluation of antioxidant, antiphlogistic, antibacterial and antifungal properties of extracts from plant materials and in vitro cultures, will be performed on the basis of biological activity studies.

The comparative evaluation of *Schisandra rubriflora* and *Schisandra chinensis* – species approved as plant drug will be carried out. The results will contribute to expanded knowledge about the chemical composition and utilities of *Schisandra rubriflora* plants cultivated in Poland.

The results will give the response to possibilities of *Schisandra rubriflora* in vitro cultures maintaining, as alternative of raw material from an ex vivo.

The obtained results of biological studies will show whether it is worth using the *Schisandra rubriflora* as substitute of *Schisandra chinensis* plant raw material.

The results will indicate differences existing between *Schisandra rubriflora* and *Schisandra chinensis.*