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Academic Degree:	prof. dr hab. inż. (Prof.)
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UPWr Base of Knowledge - link:	https://bazawiedzy.upwr.edu.pl/info/autor/UPWr5697b20a79564c8494844fa4b63adc84/Profil%2Bosoby%2B%25E2%2580%2593%2BAntoni%2BSzumny%2B%25E2%2580%2593%2BUniwersytet%2BPrzyrodniczy%2Bwe%2BWroc%25C5%2582awiu?r=autor&tab=&lang=pl
Researchgate:	
Personal website / Working group website:	
Participation in projects in last 5 years (chronological; with distinction into PI (kierownik) and RF (wykonawca)):	Kierownik NCN: 2015/19/B/NZ9/02971 Wykonawca: NCN 2015/17/B/NZ8/02411 B070/0002/22 - INNOWACYJNA ŁAGODNA OBRÓBKA WINA PROWADZĄCA DO ZWIĘKSZENIA JEGO STABILNOŚCI
Do you plan to engage support of second supervisor or auxiliary supervisor?	YES
	Second supervisor (from other discipline, Polish or international research unit)
Name and surname:	Mehdi Rahimmalek
Academic Degree:	prof. dr hab. (Prof.)
Faculty, Institute/Department:	Department of Horticulture, College of Agriculture, Isfahan University of Technology, Isfahan, Iran
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UPWr Base of Knowledge - link or most important publications from last 3 year (JCR) / patents from last 3 years (maximum 5):	1. Khodadadi, F., Ahmadi, F. S., Talebi, M., Moshtaghi, N., Matkowski, A., Szumny, A., & Rahimmalek, M. (2022). Essential oil composition, physiological and morphological variation in <i>Salvia abrotanoides</i> and <i>S. yangii</i> under drought stress and chitosan treatments. <i>Industrial Crops and Products</i> , 187, 115429. 2. Mirniyam, G., Rahimmalek, M., Arzani, A., Matkowski, A., Gharibi, S., & Szumny, A. (2022). Changes in Essential Oil Composition, Polyphenolic Compounds and Antioxidant Capacity of Ajowan (<i>Trachyspermum ammi</i> L.) Populations in Response to Water Deficit. <i>Foods</i> , 11(19), 3084. 3. Arabsalehi, F., Rahimmalek, M., Sabzalian, M. R., Barzegar Sadeghabad, A., Matkowski, A., & Szumny, A. (2022). Metabolic and physiological effects of water stress on Moshgak (<i>Ducrosia anethifolia</i> Boiss) populations using GC-MS and multivariate analyses. <i>Scientific Reports</i> , 12(1), 22148.
Researchgate:	
Personal website / Working group website:	http://rahimmalek@iut.ac.ir
Participation projects in last 5 years (chronological; with distinction into PI (kierownik) and RF (wykonawca)):	1. Gene Bank of native medicinal plants and health benefit compounds improvement with emphasize on <i>Avicenna pharmacopoeia</i> genome resuscitation. National project in Iran 2- Metabolite analysis and comparison of health benefit compounds of some Iranian native species of Lamiaceae and Apiaceae plants. supported by: Polish National Agency for Academic Exchange (NAWA)-Ulam 2021 grant BPN/ULM/2021/1/00250/U/00001.
PhD topic:	Introduction of new potential spice plants of Iranian endemic Apiaceae plants based on different validation analytical experiments.
Research discipline in Doctoral School:	Nutrition and Food Technology
Short description of the research problem to be solved in the PhD (minimum 1000 characters):	Many of the plants, from the genus <i>Apiaceae</i> find their use as medicinal and spice plants. In the middle-east region there are examples of plants, commonly used as spices, whose European counterparts are considered to be of little value as well as downright toxic. An example is <i>Heracleum persicum</i> , a plant morphologically identical to the known as toxic species "sosnovsky" or "mantegazzianum". <i>H. persicum</i> is a commonly used as a condiment for many types of food (mainly legumes and eggs). Preliminary studies conducted in the Department of Food Chemistry and Biocatalysis proved their very high chemical similarity, mainly in the area of secondary volatile metabolites as well as fumarocoumarin derivatives (e.g. psoralen, bergaptene, pimpinellin etc.). For this project, firstly we will collect the samples in proper maturity stage and then we will bring them to Poland for further analyses. We will compare several plants, with middle-east origin like <i>Dorema auchrii</i> , <i>Heracelum persicum</i> , <i>Ducrosia anethifolia</i> , and <i>Trachyspermum ammi</i> , (mainly matured seeds) in comparison with their European spice plants of this family. Above-mentioned plants are native to Iran and they are used in traditional medicine and foods. For selecting the type of species, we will collect seeds based on <i>Flora Iranica</i> from regions where they are grown wild in appropriate time. We will screen about 10-20 samples (both seeds and aerial parts) based on availability and they will be prepared for chromatographical and other food assays. The samples will be profiled and analyzed by GC/MS, HPLC, and LC/MS or NMR that can be used to identify and quantify the volatile and non-volatile compounds of the plants. Then, the selected ones fractions will be tested for other tests like cytotoxicity, antimicrobial activities. Finally, the sensory analysis of plant material will be performed in cooperation with group of prof. A. A. Carbonell-Barrachina in MHU (Spain). The results filled the gap in the chemistry, safety and possible further medicinal uses of those plants.
Professional skills for PhD candidate (e.g. master program, specializations, softwares, language, analytical techniques, minimum 500 characters):	Knowledge of principles of gas chromatography coupled with mass spectrometry, knowledge of liquid chromatography and liquid chromatography coupled with mass spectrometry. Practical use of nuclear magnetic resonance in biological assays. We expect the very good skills of software used for chromatographical data handling, such as MestreNova, Spectrus as well as statistical analysis (e.g. SPSS and SAS software) knowledge as well as multivariate analyses. Principles of plant botany and knowledge on molecular markers for evaluation of genetic relationships of different population along with their respected metabolites. English communicative is required.
a) Project title:	
b) Agreement number:	
c) Number of months in the project to support PhD (in months; starting from 1st of October 2022):	
Project website:	