

Kratek opis usposabljanja mladega raziskovalca (*Short description of the Young Researcher's training*)

1. Raziskovalna organizacija (*Research organisation*):

Univerza v Ljubljani, Biotehniška fakulteta

2. Ime, priimek in elektronski naslov mentorja (*Mentor's name, surname and email*):

Prof. dr. Metka HUDINA, metka.hudina@bf.uni-lj.si

3. Šifra in naziv raziskovalnega področja (*Research field*):

4.03 Rastlinska produkcija in predelava

4. Kratek opis usposabljanja mladega raziskovalca (*Short description of the Young Researcher's training*):

Navedite tudi morebitne druge zahteve, vezane na usposabljanje mladega raziskovalca (npr. znanje tujih jezikov, izkušnje z laboratorijskim delom, potrebne licence za usposabljanje...).

slo:

Oljka (*Olea europaea* L.) je ena najpomembnejših in najbolj razširjenih sadnih vrst v Sredozemlju. Večina pridelanih oljk je namenjena predelavi v oljčno olje, vendar se velik del predela tudi za neposredno prehrano ljudi z uporabo različnih sort oljk. Oljka je dober vir fenolnih spojin, ki so sekundarni rastlinski metaboliti. Za fenole, ki jih najdemo v plodovih oljk in v oljčnem olju, je vse večje zanimanje, ne le zaradi njihovih bioloških lastnosti, temveč tudi zaradi njihovega prispevka k barvi in okusu končnega izdelka, pa tudi zaradi njihovih možnih koristnih vplivov za zdravje ljudi, kar je posledica njihove dokazane aktivnosti pri preprečevanju raka in boleznih srca in ožilja. Kakovost oljčnega olja je med drugim v veliki meri odvisna od kakovostim plodov oljk in čas obiranja. Posebej so zanimive tudi presnovne poti, ki so odgovorne za tvorbo oljčnih fenolnih in aromatskih spojin. Sladkorji imajo pomembno vlogo v plodu oljke: povezani so s teksturo ploda, ker so pomembni sestavni deli celične stene, so prekuzorji biosinteze oljčnega olja in zagotavljajo energijo za metabolne spremembe. Sladkorji v plodovih oljk predstavljajo do 3,5-6%, kar je majhna količina v primerjavi z drugimi skupinam spojin. Fenolne spojine predstavljajo manjši delež ploda (1-3% sveže mase mesa ploda), vendar imajo zelo pomembno vlogo pri njihovih antioksidativnih, protivnetnih in proti rakavih učinkih. Profil fenolnih spojin v plodu oljke je zelo zapleten in je odvisen od dejavnikov, kot so sorta, zrelost ploda in okoljski dejavniki.

Mladi raziskovalec bo raziskoval vplive različnih agrotehničnih ukrepov na razvoj, dozorevanje in kakovost plodov. Raziskave določanja fenolnih snovi in primarnih metabolitov v plodovih bodo vključevale metode tekočinske kromatografije in masne spektrometrije ter metode določanja vegetativne rasti in kakovosti plodov. Nova spoznanja bodo uporabna na različnih nivojih. Pridobili bomo poglobljen vpogled v slabo raziskane mehanizme odziva rastlin, kar bo omogočilo možnosti vplivanja na procese, predvsem s ciljem povečanja vsebnosti fenolnih spojin, ki povečujejo kakovost oljčnega olja.

Od kandidata se pričakuje dobro poznavanje delovanja rastlin in metabolizma, kar kandidat

dokazuje z opravljenimi ustreznimi izpiti na BSc ali MSc stopnji. Zaželeno so izkušnje z delom v laboratoriju in dobro znanje angleškega jezika.

eng:

Olive (*Olea europaea* L.) is one of the most important and widespread fruit trees in the Mediterranean basin. Most olive production is destined for olive oil; however, a considerable part is processed for direct human consumption using different types of olives. The olive is a good source of several phenolic compounds, which are secondary plant metabolites. There is an increasing interest in the phenols found in olive fruit and olive oil, not only because of their intrinsic biological properties, but also for their contribution to the color and flavor of the final product, as well for their possible beneficial implications for human health, a consequence of their demonstrated activity in the prevention of cancer and cardiovascular disease. The quality of olive oil is largely determined, among other factors, by the quality of olive fruit and harvest time. The metabolic pathways responsible for the formation of olive phenolic and volatile compounds are also of particular interest. Sugars play an important role in the olive fruit: they are related to the textural properties because they are important components of the cell wall, they are precursors of olive oil biosynthesis, and they provide energy for metabolic changes. Sugars in the olive fruit represent up to 3.5-6%, a small amount compared to other drupes. Phenolic compounds are minor constituents of the olive fruit (comprising 1–3% of the fresh pulp weight) but have very important roles in their antioxidant, anti-inflammatory and anti-carcinogenic activities. The profile of phenolic compounds in the olive fruits is very complex and depends on factors such as the cultivar, ripening stage or season.

Young researcher will evaluate the effect of different agro-technical measurement on plant development, ripeness and fruit quality. The research of phenolics and primary metabolites in fruit will involve methods based on high performance liquid chromatography coupled with mass spectrometry and methods of plant vegetative growth and fruit quality determination. New knowledge will be usable on different levels. We will gain the new insights into poorly researched plant response mechanisms, which will provide opportunities to influence the processes, especially with the aim of increasing the content of phenolic compounds that increase the quality of olive oil.

The candidate should have good knowledge of plant functioning and metabolism, which should be demonstrated with passed exams covering these topics on either BSc or MSc level. Good knowledge of English and the experiences at laboratory work is desirable.