Metabolites from Cannabis – green expansion of chemical and biological space

Cannabis sativa is plant characterized by a plethora of medicinal properties attributable to the complex composition of its secondary metabolism consisting in phytocannabinoid (PCs), prenylated flavonoids, terpenoids. To date, 200 members of this chemical family have been isolated; among them, the most known are THC, CBD, and CBG. Based on the relative content of PCs, five chemotypes of *C. sativa* are distinguishable, whose metabolic content is strictly related to genetic variations.

This research theme is in line with our interest in the phytochemical investigation of different chemotypes of *C. sativa* (chemotype III, *J. Nat. Prod. 2020, 83, 9, 2727–2736* and *J. Nat. Prod. 2022, 85, 4, 1089–1097*; chemotype V, *Plants 2022, 11, 2130*; chemotype IV, *in press*). Isolated metabolites exhibited activities on underexplored biological targets (TRP, PPARy, Nrf2).

This research project aims to further broaden the knowledge of chemical and biological space of PCs and other typical *Cannabis* secondary metabolites with four main objectives:

- 1. evaluation of the impact of nutrient modulation and salinity stress on the cultivation of fiber hemp *C. sativa* L. and on their PCs content;
- 2. selection of the optimized cultivars for agronomical and chemical/pharmacological applications;
- 3. selection and utilization of industrial trashing residues of hemp for the obtainment of biomolecules of interest;
- 4. Expansion of chemical and pharmacological space of PCs. Among biological endpoints, particular relevance will be attributed to antibacterial evaluation on MDR strains, in line with the objectives of the available funding n.1.

The project proposal is part of the research activities of the PNRR, Mission "Green Revolution-Ecological Transition".

The research will benefit from the collaboration of academic and industrial partners (Indena), already active in the research group.

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