

***Ononis* isoflavonoids aiming the CNS**

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Based on our previous results, *Ononis spinosa* L. contains a wide variety of isoflavonoids [1,2], of which formononetin showed favourable results in the treatment of Alzheimer-disease *in vivo* and *in vitro* [3], maackiain could inhibit selectively the MAO-B enzyme [4]. Regarding these outcomes, *Ononis* species could be rich sources of compounds affecting the CNS.

Since with biotechnology secondary metabolite production can be multiplied, the investigation of the isoflavonoid production of *in vitro* cultures was aimed beside the qualitative and quantitative characterization of free-range *Ononis* species. Moreover, we intended to study the CNS permeability of these isoflavonoids.

The main technique of the qualitative investigation was UHPL-HR-MS/MS supplemented with NMR experiments. For the quantitative measurements, HPLC-DAD and HPLC-ESI-MS/MS methods were developed. The isolation of the compounds was executed using flash-chromatography and preparative HPLC. The permeability through the blood-brain barrier was estimated by PAMPA-BBB model.

Based on the results of the quantitative analysis both *Ononis* species are very rich in isoflavonoids, but the hairy root cultures of *O. spinosa* exceeded all samples with outstandingly high total-isoflavonoid content. However, we found remarkable differences between the isoflavonoid profile of the *in vitro* and the free-range samples. According to the PAMPA-BBB measurements, all investigated isoflavonoid could pass the brain-blood barrier.

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References

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