

## **Tracer method (<sup>14</sup>C-labelling) for investigating the metabolic flux pattern in triterpenoid biosynthetic pathway in *Calendula officinalis* hairy roots after elicitation with jasmonic acid**

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Triterpenoids are plant metabolites derived from the C30 linear precursor squalene. Their functions are ascribed both to primary metabolism (e.g. participation of sterols in the structure and fluidity regulation of cellular membranes) and secondary (specialized) metabolism, particularly involved in diverse strategies of plant chemical defence. Therefore, the biosynthetic step of 2,3-oxidosqualene cyclization is often regarded as a branch point between primary and secondary triterpenoid metabolism [1], which can be switched in response to various stress factors. The aim of the present study was to investigate the possible modifications in metabolic flux pattern in biosynthetic pathway of triterpenoids in marigold *Calendula officinalis* hairy root culture after elicitation with jasmonic acid with the use of radioactive precursor: <sup>14</sup>C-labelled mevalonic acid. Labelling dynamics evaluated during 3 weeks after elicitation revealed that pentacyclic triterpene acid – oleanolic acid was approx. 100-times better labelled than in the untreated control, whereas sterols were labelled by 30% better in the control as compared to elicited samples. The obtained results confirmed that jasmonic acid induces the redirection of the carbon flow between the two competing pathways following 2,3-oxidosqualene cyclization, and it favours the biosynthesis of defence compounds over metabolites involved in basic metabolism.

### **Reference**

[1] Moses T et al. *New Phytologist* 2013; 200: 27-43.