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# ABSTRACT BOOK

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**INFLUENCE OF AIRBORNE METHYL JASMONATE ON  
MEROTERPENE BAKUCHIOL CONTENT IN PSORALEA ENSIFOLIA ASEPTIC  
PLANTS**

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Regulation of biosynthesis of the desired natural products is one of the main goals of plant metabolic engineering. Plant-derived meroterpene bakuchiol is an attractive target for it due to a variety of its biological activities. Despite of an intensive investigations of therapeutic effects of bakuchiol, its biosynthetic pathways are weakly studied and factors which could influence on its biosynthesis remain unknown. It is especially interesting because of a mixed biogenesis of bakuchiol, so a metabolic cross-talk takes place in its synthesis.

Methyl jasmonate (MeJA) is known as one of the main modulators of an expression of plant secondary metabolism genes. To date its stimulating effect on a biosynthesis of a variety of secondary metabolites was shown. Bakuchiol was found in shoots and seeds of some species of the tribe Psoraleae (Fabaceae); both undifferentiated and root cultures, however, failed to produce it in any significant amounts. So we have tried to modify the bakuchiol biosynthesis directly in plants by treatment of aseptic *Psoralea ensifolia* plants by gaseous MeJA.

The plants (derived from the same clone) were exposed to MeJA vapors in 200 ml air-tight jars by incubating it together with filter paper strips to which were applied 2  $\mu$ l of MeJA (1:100, MeJA:ethanol) or ethanol alone as a control. The jars were cultivated at 20-22°C in 16/8 photoperiod for 24 h; after that the strips were removed and the jars were cultivated at the same conditions at 48 hours. The aboveground part of plants was collected, dried, extracted by chloroform; bakuchiol content was determined by HPLC-UV and expressed as % of the plant dry weight.

As a result no stimulating effect but clear tendency to inhibition of bakuchiol biosynthesis in *P.ensifolia* plants upon MeJA treatment has been observed. Bakuchiol content has decreased by over a third from  $3,4 \pm 0,52$  % in control plants to  $2,15 \pm 0,18$  % in MeJA-treated ones. Decreasing of metabolites content due to MeJA presence has been reported rather seldom, which is probably caused by practical requirement for increasing of the desired products yield – so the decline of the one's production is regarded as negative result and isn't published. Meanwhile, down-regulation by MeJA has been shown on the level of both a metabolite content (e.g. chlorophylls, madecassic acid) and an expression of secondary metabolism genes (e.g. genes of the steviol glycosides biosynthesis pathway). In our case, a re-directing of intermediates of bakuchiol biosynthesis to other biosynthetic pathways has been supposed, which requires further investigations.