



## Methyl Jasmonate Potentiated Pyruvic Acid Effect on the Production of Secondary Metabolites in King of Bitters Plant *Andrographis paniculata* Cell Culture

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*Andrographis paniculata* is the most important herb of the Acanthaceae family. It is used in the treatment of many diseases, including AIDS, hepatitis and cardiovascular disease for centuries in Asia [1]. The use of elicitors and precursors as a means of increasing the production of secondary metabolites in suspensions today is of great interest to researchers [2]. Therefore, in this study, the effect of methyl jasmonate as an elicitor and pyruvic acid as a precursor on *Andrographis paniculata* cell suspension culture was investigated. The experiment was conducted as a factorial experiment in a completely randomized design with 3 replications. Pyruvic acid was added to cell cultures at 4 concentrations (0, 0.01, 0.1 and 1 mM) and methyl jasmonate also at two concentrations (0 and 100  $\mu$ M). Untreated cultures were considered as control. The results showed that the effect of methyl jasmonate and pyruvic acid and their interaction on growth, phenolics, flavonoids, and anthocyanins content, antioxidant capacity, phenylalanine ammonia lyase enzyme activity and andrographolide production was significant. By increasing concentration of methyl jasmonate and pyruvic acid with the exception of cell growth the other parameters increased significantly. A synergism mode was observed under the interaction effect of methyl jasmonate and pyruvic acid on parameters such as antioxidant capacity, phenylalanine ammonia lyase enzyme activity and andrographolide production compared to individual treatments. The highest amount of andrographolide (34.56 mg/g dry weight) was achieved at cultures concurrently treated with 1 mM of pyruvic acid and 100  $\mu$ M of methyl jasmonate which was about 3.4, 1.5 and 13.8 times that of the cultures treated with pyruvic acid, methyl jasmonate and control cultures respectively.

**Keywords:** *Andrographis paniculata* L.; Secondary metabolite; Elicitation; Cell culture

### References

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