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Transcriptome mapping reveals candidate genes for colchicine metabolism in *Gloriosa superba* and *Colchicum autumnale*

Ganapathy Sivakumar and **John Samuel Bass**
University of Houston, USA

Therapeutic use of plant-based colchicine has increased in the medical sector because it is a potential alkaloid-based and FDA approved drug, which is biosynthesized by *Gloriosa superba* L. and *Colchicum autumnale* L. However, the biosynthesis of colchicine metabolism is not well characterized and continues to be a barrier to biomanufacturing this biomedicine. To understand the enzymes involved in the colchicine pathway, a comparative transcriptome mapping of *G. superba* and *C. autumnale* has been carried out, which could help to improve colchicine biomanufacturing through metabolic engineering or synthetic biotechnology. Transcriptome analysis using Blast2GO revealed candidate colchicine biosynthetic genes from *G. superba* and *C. autumnale* including *N*-methyltransferase, P450s, *O*-methyltransferase and *N*-acetyltransferase.

Biography

Ganapathy Sivakumar's research is primarily focused on biomanufacturing and biotech implications of biopharmaceuticals. He has extensively studied the plant-based small molecules pathway biochemistry, synthetic biotechnology and metabolic & bioprocess engineering. He is internationally recognized in the field of biopharmaceuticals and a pioneer in biomanufacturing of biorhizome-based colchicine. He has over 50 publications. He is also on the editorial board of several journals. He serves as an expert of grant proposals as well as numerous scientific journals. His laboratory focuses on metabolic and bioprocess engineering of colchicine pathway and developing potential anticancer medicine.

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