

Biochemical impact of sulphur addition on the metabolism of glucosinolates in *Brassica juncea*- Revealed by metabolome analysis

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Sulfur is an essential macro element in plant and animal nutrition. Plants assimilate inorganic sulfate in to two sulfur-containing amino acids, cysteine and methionine. The high supply of sulfate leads to increased sulfur pools within plant tissues. The sulfur related metabolites represent an integral part of plant metabolism with multiple interactions; increasing sulfur induces a number of adaptive responses, which is coordinated. Glucosinolates (GSL) are sulphur containing amino acid derived allelo-chemicals present in *Brassica juncea*. Methionine, in plants, is converted to aliphatic GSL via the aliphatic glucosinolate pathway & addition of sulphur should increase the concentration of amino acid & GSL as a consequence of up regulation of

sulphur metabolism. To test this hypothesis, metabolite profiling of *Brassica juncea* was undertaken. Liquid chromatography technique revealed significant increase of in the concentration of key metabolites of aliphatic GSL pathway in the test plants than the control. The observed increase in levels of GSL gave evidence for an increase of metabolic activity under conditions of increased sulfur supply. This is achieved by a systemic adjustment of metabolism involving the amino acid & GSL metabolic pathways. Sulfur is partitioned by accumulation of cysteine which is converted to methionine and it is further channeled to aliphatic Glucosinolate pathway.

Biography

Dr B K Singh is Assistant Professor at Department of Chemistry, University of Delhi, India. Dr S K VenuGopal is Senior Scientist at Mustard Research & Promotion Consortium, New Delhi, India. Sibaji Kumar Sanyal is junior research fellow at Mustard Research & Promotion Consortium, New Delhi, India.