

## Differential expression of desaturase genes in developing seeds of high and low ALA containing Indian flax varieties

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Flax or linseed (*Linum usitatissimum* L.) is an important oil seed crop having high nutritional as well as industrial value. It is the richest and the cheapest vegetarian source of  $\alpha$ -linolenic acid (ALA), which is an omega-3 fatty acid. ALA is an essential dietary fatty acid for humans and serves as a precursor for biologically active longer chain poly-unsaturated fatty acids (PUFA) of omega-3 class, mainly eicosapentanoic acid (EPA) and docosahexanoic acid (DHA). Since flax is the only agricultural source of high ALA (45-65%) and there exists varietal variation in biochemical parameters, oil content and quality, it is essential to exploit it for omega-3 nutrition.

In fatty acid biosynthetic pathway, desaturases are considered to be the key enzymes that drive the

entire pathway leading to the synthesis of PUFA. Three desaturase genes ( $\Delta 9$ ,  $\Delta 12$  and  $\Delta 15$ ) have been reported from flax, which convert the stearic acid to oleic acid ( $\Delta 9$ ), oleic acid to linoleic acid ( $\Delta 12$ ) and linoleic acid to  $\alpha$ -linolenic acid ( $\Delta 15$ ). The desaturase genes present considerable amount of variability among the plants. Hence, to know the genetic basis of low and high ALA content in the different flax varieties, real time expression analysis of the 3 desaturase genes from five low and five high ALA containing Indian flax cultivars during seed development is being carried out. The expression profiles will be compared with the fatty acid profiles for the same tissue, so as to reveal varietal specific as well as temporal expression pattern of these genes during seed development.

### Biography

Mrs. Ashwini V. Rajwade is pursuing her doctoral research at National Chemical Laboratory, Pune India, under the guidance of Dr. Vidya S. Gupta. She has completed her B.Sc. and M.Sc. Zoology from Pune University and Mumbai University respectively. She is availing Senior Research Fellowship from CSIR to support her doctoral research.