

Omega-3 in linseed and its role in human diet

NIDHI KOSHTA, PARDEEP YADAV AND SANGEETA TETWAR

Department of Genetics and Plant Breeding, Indira Gandhi Krishi Vishwavidyalaya, RAIPUR (C.G) INDIA

Email : neekos09@gmail.com, ypradeep@yahoo.co.in, sangeeta.tiwari999@gmail.com

Linseed oil is well-known for its health benefits mainly attributed to its high content of omega-3 alpha linolenic acid (55-57%). Linseed oil is composed of five main fatty acids, namely palmitic (C16:0;~6%) (PAL), stearic (C18:0;~2.5%) (STE), oleic (C18:1 cis Δ^9 ; ~19%) (OLE), linoleic (C18:2 cis Δ^9 ; \square 6 fatty acid; ~24%) (LIO) and linolenic (C18:3 cis $\Delta^{9,12,15}$; \square 3 fatty acid; ~55.57%) (LIN) acid. The nutritional significance of flax seed oil is due to the presence of higher level of α -linolenic acid (ALA) of omega-3 fatty acid (O3FA) family. ALA, an essential fatty acid, acts as precursor of biological active longer chain polyunsaturated fatty acid (PUFA) of omega-3 class, mainly eicosapentaenoic acid (EPA) and Docosahexanoic acid (DHA). The positive impact of LC omega-3 on heart health includes: protection against heart attacks by reducing the risk of abnormal heart rhythms; maintaining healthy blood vessels. At present Western diet is "deficient" in omega-3 fatty acids with a ratio of omega-6 to omega-3 of 15/1 to 16.7/1, instead of 1/1 as is the case with wild animals and presumably human beings. A land plant source of LC omega-3, if achieved and assuming their cultivation will be permitted will be cheaper than using yeast or microalgae. The omega-3 desaturase obtained from the roundworm *Caenorhabditis elegans* efficiently and quickly converted the omega-6 fatty acids.

Key words : Omega-3, Omega-6, α -linolenic acid (ALA), Eicosapentaenoic acid (EPA), Docosahexanoic acid (DHA), Linseed

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