

A Review:

Quality improvement in rapeseed-mustard

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(Accepted : March, 2008)

SUMMARY

Rapeseed and mustard oil is richest source of energy, contain several vitamins, where the remaining product of processing are used in industries. Nature of the fatty acid present in the triglycerides determine the nutritional quality and industrial quality of oil. Erucic acid and glucosinolate are the two compounds present in the rapeseed which decrease the quality. Erucic acid is deposited in the heart muscle and poorly digested whereas glucosinolate on enzymtic hydrolysis produces goiterogenic aglycones which reduce the palatability of meal. Breeding approaches like selection, mutation, hybridization, backcross methods along with newly developed biotechnological tools, are followed to reduce the erucic acid, glucosinolate, crude fibre content, phytic acid and p-hydroxy benzoic acid in the existing rapeseed-mustard varieties. The development of '0' (zero) and '00' (double zero) varieties have proved that conventional breeding would overcome the problem of poor yield with better nutritional value of oil and meal.

Key words : Rapeseed-mustard, Fatty acids, Erucic acid and glucosinolate.

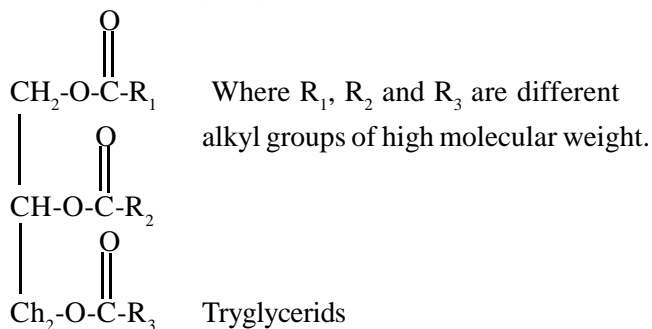
Rapeseed and mustard oil is predominantly used for Redible purposes, while defatted meal is utilized as an animal feed. Vegetable oils and fats (lipids) constitute an important component of human diet, ranking third after cereals and animal products. Lipids are concentrated source of energy and contain vitamins (vitamin E and pro-carotenoids or vitamin A) and form structural components of cell organization. Oils and fats have many industrial applications including manufacture of soaps, detergents, decorative and protective coating, lubricants, synthetic resins and plasticizers. It is estimated that about 90% of the vegetable oils are used for edible purposes, while the remaining part is utilized in industrial applications. The minimum daily recommended intake of oils and fats is 30 g/day/person. Oil content in seeds is one of the important quality parameters in oilseeds. Over the years, breeding efforts in rapeseed-mustard have led to considerable improvement in oil content, some of the recently released varieties and hybrids.

MATERIALS AND METHODS

Fats and oils:

Oils and fats esters of glycerols with higher fatty acids *i.e.* they are glycerol esters or glycosides. Oils are liquid at ordinary temperature and contain large proportion of unsaturated fatty acids while fats are solid at ordinary temperature and contain a large proportion of saturated fatty acids. The fatty acids present in glycerides are

almost exclusively straight chain acids and always contain even number of carbon atoms because all fatty acids are synthesized from 2 carbon compound acetyl-Co A. The chief saturated fatty acids are lauric (12:0), myristic acid (14:0), palmitic acid (16:0) and stearic acid (18:0). The main unsaturated fatty acids are oleic acid (18:1), linoleic acid (18:2), linolenic acid (18:3), eicosenoic acid (20:1) and erucic acid (22:1).



RESULTS AND DISCUSSION

Fatty acids biosynthesis:

Fatty acids are long chain aliphatic organic acids. When they do not contain a double bond in their carbon skeleton they are called saturated fatty acids, and on the other hand, when they contain 1, 2 or more double bonds in their carbon skeleton they are called unsaturated fatty acids. Total number of different fatty acids known in nature is more than 300. The major fatty acids which constitute about 90% of the fatty acids present in seed oils are as follow.

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