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Interspecific hybridization of *Brassica juncea* (local mustard) with *Brassica napus* to improve the fatty acid content of *B. juncea*

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Mustard (*Brassica juncea*) which is used as a condiment in Sri Lanka, and in the Indian sub-continent is an important oilseed crop. Sri Lanka has over 60 local accessions of *B. juncea* in the gene bank of the Plant Genetic Resource Centre (PGRC) at Gannoruwa. Canola (*Brassica napus*) is a major oilseed crop in the USA, Canada, Europe, China and Australia. Canola has an ideal fatty acid composition from a human nutrition point of view. Linoleic acid and linolenic acid present in both mustard and canola are nutritionally desirable. Oleic acid present in high levels in *B. napus* and in low levels in *B. juncea* is also nutritionally desirable as it is monounsaturated. Intensive breeding using mutants of *B. napus* has reduced erucic acid to nearly zero. However, canola quality *B. napus* genotypes are adapted to temperate regions and do not grow successfully in the tropics. Thus, breeding *B. juncea* with varieties of plants with low levels of erucic acid is necessary to use it as a vegetable or cooking oil. Transfer of accepted canola quality characters to mustard by interspecific crossing would be a rapid means to improve oil quality and other parameters of local *B. juncea* germplasm.

Fatty acid profiles of thirteen local mustard accessions and six spring canola (*B. napus*) varieties grown in Western Australia were analyzed by gas chromatography. Erucic acid level of spring canola varieties, Narendra, Monty, Oscar, Hyola, Karoo and Outback were very low (0.2-0.6%) compared to that of local mustard accessions (40-46%). Also, oleic acid levels were very low in local mustard accessions (13-19%) than that of canola varieties (38-57%). In local mustard accessions the levels of linoleic acid (17-21%) and linolenic acid (9-12%) were more or less similar to that of canola [linoleic acid (16-22%) and linolenic acid (10-13%)]. To improve the fatty acid profile of local mustard, the six spring canola varieties were crossed with local mustard accessions and the fatty acid profiles of the F_1 hybrids were determined. These F_1 hybrids showed a moderate erucic acid content (18-21%) compared to mustard (40-46%) and slightly lower content of oleic acid (33-41%) compared to canola (38-57%) varieties. Linoleic acid level (15-18%) and linolenic acid level (9-10%) of F_1 hybrids did not show a considerable variation with that of local mustard and spring canola.

The Seed germination of F_1 hybrids *ex vitro* was very poor. Only F_1 hybrids of cv. Narenda x *B.juncea* germinated *ex vitro*. All the F_1 hybrid embryos were rescued using Lichter medium (1982). Thus, this study concludes that the fatty acid profile of *B. juncea* can be improved towards canola quality oil by interspecific hybrids and embryo rescue. Further improvement of the fatty acid profile of mustard requires backcrossing to the canola parent and selection to identify breeding lines.