Inheritance of modified fatty acid composition in Australian lines of *Brassica napus*

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Canola cultivars with altered seed oil quality, in particular increased oleic acid (C18:1) and reduced linolenic acid (C18:3) composition are being developed to enhance the frying life of canola oil. Conventional canola oil has a fatty acid profile of approximately 60% oleic acid, 20% linoleic acid and 10% linolenic acid, whereas, the modified lines have > 65% oleic acid and ≤ 3% linolenic acid. Linolenic acid is highly unsaturated so it is readily oxidized, causing a distasteful flavour and reducing frying life of the oil in comparison to other deep-frying oils such as palm oil. The modified canola lines have oils with improved frying life and taste. Preliminary evaluation of Australian canola germplasm with modified fatty acid composition indicated different inheritance patterns for low linolenic acid composition in comparison to the Canadian low linolenic acid cultivar, Apollo. Thus, more detailed studies were conducted to determine the genetic control of low linolenic acid composition in Australian varieties and to compare this to the inheritance in Apollo. Crosses were made between an Australian low linolenic acid breeding line and the Canadian low linolenic acid cultivar, Apollo; and between the conventional cultivar, Dunkeld, and Australian and Canadian low linolenic acid breeding lines/cultivars. F_1, F_2 and backcross populations were grown in the field at Horsham, Victoria in 2001 and seed samples were taken for analysis of fatty acid composition. Analysis of the segregation of phenotypes will be presented and the inheritance of the modified fatty acid composition in Australian lines and the Canadian cultivar will be compared.