

Glucosinolate Levels in Canadian Canola

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The present official definition of canola is an oil that must contain less than 2% erucic acid and the solid component of the seed must contain less than 30 micromoles of any one or any mixture of 3-butenyl glucosinolate, 4-pentenyl glucosinolate, 2-hydroxy-3 butenyl glucosinolate, and 2-hydroxy-4-pentenyl glucosinolate per gram of air-dry, oil free solid. This is approximately 18 micromoles per gram of seed on an air-dry basis. A few years ago the Canola Council of Canada, which owns the trademarked term "canola", proposed that the definition be changed to include the presence of the indol glucosinolates, not included in the original definition. The proposed new canola definition was in part, "Seed of Brassica oilseeds that contain less than 18 micromoles total glucosinolates per gram whole seed at 8.5% moisture." To date this change has not been formalized.

However, in anticipation of this definition change the Western Canada Canola/Rapeseed Recommending Committee (WCC/RRC) of the Canola Council of Canada, that sets the standards for quality characteristics that must be present in any canola variety offered for sale in Canada, established a new minimum glucosinolate level. The level was set low enough to ensure the commercial crop grown from pedigree seed would more that meet the new parameter. The WCC/RRC determined that any canola candidate cultivar to be registered for sale in Canada must have a glucosinolate level in the whole seed not exceeding 12 micromoles of total glucosinolate per gram of seed at 8.5% moisture. Further, the glucosinolate content must not be more than the mean of the designated checks, minus 1.3 micromoles. The 1.3 value is based on the present check varieties Defender, Legacy and AC Excel. This figure will change when new check varieties are incorporated. The seed used to determine the glucosinolate level is drawn from the WCC/RRC Co-operative trials conducted through out the Canadian canola growing regions.

The Grains Research Laboratory of the Canadian Grain Commission (CGC) monitors the quality of the western Canadian canola crop. Every year the CGC conducts a harvest survey and publishes a report on the quality of Canada's canola. In their reporting the CGC also reports the total glucosinolate content in whole seed at 8.5% moisture. The 2002 total glucosinolate level from the CGC report is 12 micromoles per gram, slightly higher than the 11 micromoles per gram in 2001. The large proportion of the *B. napus* crop samples in the 2002 crop contributed to the overall low glucosinolate levels for the entire crop. In Canada approximately 95% of the canola crop is produced from *B napus* varieties. For 2002, drought caused a slight increase in glucosinolate levels in some areas and there was an increase in *Brassica rapa* samples. *Brassica rapa* varieties, particularly some of the

older varieties, have higher intrinsic glucosinolate levels. No.1 Canadian canola in the harvest survey has a level of 12 micromoles glucosinolate per gram. No. 2, No. 3 and sample canola usually contains slightly higher glucosinolate levels of 13 to 15 micromoles per gram. The mean glucosinolate level from 1992 through 2001 is 12 micromoles per gram of seed at 8.5% moisture. The export shipments of No.1 Canadian canola from October shipments from Thunder Bay and Vancouver generally average about 13 micromoles per gram. The quality of the Canadian canola crop can be accessed from the Canadian Grain Commission website, www.grainscanada.gc.ca, under harvest surveys/crop quality reports for canola.