

Processing quality of organic and conventional milks from Irish pasture based systems

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Introduction The maintenance of white clover in the pasture sward is essential to viable organic farming in Ireland. Thus, the diet of the organically and conventionally managed cow is different. It is well documented that milk composition is affected by cow diet (Kefford *et al.*, 1995). This study addresses the issue of technological quality differences between conventionally and organically produced milks.

Materials and methods Two spring-calved Friesian herds under conventional (97 cows) and organic (21 cows) management were established. The conventional and organic herds were stocked at 2.5 cows/ha and 1.4 cows/ha, respectively. Both herds received 570 kg concentrate/cow. Samples from conventional and organic bulk herd milks were collected at 2 weekly intervals during the lactation of 2001 (May to October). Milks were analysed for gross composition (Milkoscan), rennet coagulation characteristics (rennet coagulation time in min and curd firmness at 60 min in mm of amplitude) (McMahon & Brown, 1982) and N-fractions of total protein (IDF, 1993). Both organic and conventional milks were also investigated with respect to somatic cell count (SCC) (Somacount 300), thiocyanate levels (Partanen *et al.*, 1998) and a shelf-life study.

Results Mean milk yields of organic and conventional herds were 4,469 l/cow and 5,228 l/cow, respectively. Mean fat and protein concentrations of organic and conventional milks were 4.07 (± 0.272) and 3.42 (± 0.239), and 4.11 (± 0.380) and 3.51 (± 0.253) g/100g, respectively (Figure 1). Mean casein number (indicator of cheese yield) of organic and conventional milk was 79.3 (± 1.22) and 77.7 (± 0.67), respectively. Mean rennet coagulation time and curd firmness for these milks were 19.9 (± 4.21) min and 40.7 (± 7.59) mm, and 20.0 (± 4.02) min and 41.8 (± 7.27) mm, respectively. Somatic cell count of organic and conventional milks was 230 (± 39.3) $\times 10^3$ and 317 (± 71.2) $\times 10^3$ cells/ml, respectively. Average thiocyanate values of 7.94 mg/l (± 1.90) and 5.64 mg/l (± 1.91) were recorded for organic and conventional milks, respectively (Figure 2).

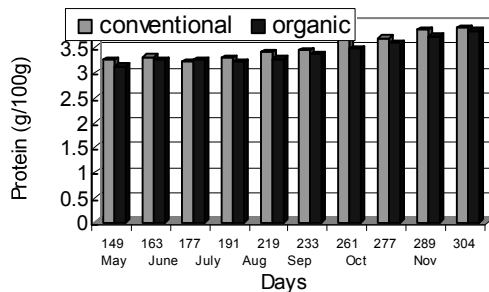


Figure 1 Protein content of organic and conventional milks

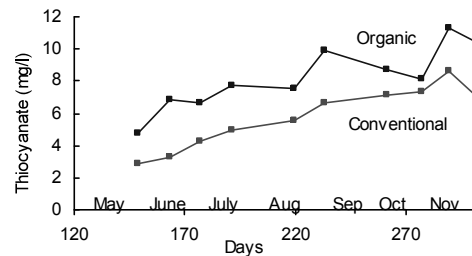


Figure 2 Thiocyanate content of organic and conventional milks

Conclusions Mean protein content and casein number of conventional and organic milks were higher by 0.1% and 1.6%, respectively. Fat content and rennet coagulation properties of the milks were similar. Both organic and conventional milks had a similar shelf-life with no advantage evident from the higher thiocyanate levels in the organic product. The absence of overall superior processing qualities of organic compared to conventional milk means the market for organic milk is very much dependent on consumer perception and emphasises the importance of strict monitoring of organic production rules in an environment of premium payments.

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