

Title Internal contamination and spoilage of harvested apples by patulin-producing and other toxigenic fungi

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Abstract

A total of 424 apple samples comprised of six varieties (Gala, Red Delicious, Golden Delicious, Fuji, Granny Smith, and Braeburn) were analyzed for internal fungal contamination. Two hundred sixteen apples were incubated intact for 2–4 weeks at room temperature. The cores of the remaining 208 apples were aseptically removed and incubated without supplemental media at room temperature for 3 weeks. After the incubation period was over, the mycological profiles of the analyzed samples were determined. Twelve per cent of the intact apples showed visible growth after 2–4 weeks of incubation at room temperature. *Penicillia* (including the patulin producer, *Penicillium expansum*) were the most frequent, found in 8% of the samples followed by *Fusarium* and *Alternaria* spp. (each found in 3% of the samples tested). The highest mould incidence was observed in the Red Delicious and Fuji and the lowest in the Granny Smith variety.

A variety of microfungi including members of the toxigenic genera *Alternaria*, *Penicillium* and *Fusarium* were isolated from the apple cores. The predominant moulds were *Alternaria*, *Cladosporium*, *Penicillium* and *Fusarium* spp. recovered from 50, 22, 33 and 23% of the analyzed samples, respectively. Less common were *Ulocladium* spp., *Botrytis cinerea* and *Aureobasidium pullulans* found in less than 4% of the samples. Yeasts were found only in 2% of the samples. Apple cores from all varieties tested showed a high degree of mould contamination.