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Hygienic quality of stem fractions of mechanically processed fibre hemp and linseed

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### Abstract

Bast fibre is the most important fraction of bast fibre plants for technical products, i.e. thermal insulations and packaging materials. The hygienic quality of the various fractions of bast fibre plants is of interest in thermal insulations, because it may affect the quality of indoor air. Packaging materials may be associated e.g. with foodstuffs, which highlights the importance of hygienic quality. The aim of this study was to screen the hygienic quality, determined as microbial content, of mechanically fractionated fibre hemp and linseed plants harvested in the autumn before frost, after early frost and in spring. In addition, the possible correlation between microbes and ash was investigated. Two plant species, fibre hemp and linseed were studied. The plants were cultivated in Siuntio in southern Finland during the years 2002 and 2003, harvested in autumn or in spring and mechanically fractionated. The microbial contents of the fractions were examined by measuring the total number of microbes using Hygicult® growing slides. The microbial content of fractions of fibre hemp and linseed varied between 10<sup>3</sup> and 10<sup>9</sup> cfu/gdw. The fibre of hemp harvested after early frost or in spring had the lowest amount of moulds, but during winter and spring the amounts of bacteria and yeasts increased in hemp. Mechanically separated fibre and shive contained less microbes than the stalk. Ash contents of all examined samples of stems and stem fractions varied between 1% and 14%. The fibre after fractionating had a lower ash content (2.3–3.3%) than that of stems (4.4–6.9%) harvested in the autumn. The ash content of stem and shive decreased to 1.6% during winter, the ash content of fibre being even somewhat lower (0.9%). No correlation was observed between the contents of microbes and ash.

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