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Assessment of Current Drying Practices for South American Pepper Varieties (*Capsicum* spp) with Respect to Final Product Quality

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Abstract

Worldwide fresh and dried *Capsicum* species are used as ingredients in foods and medicines. In Peru and Bolivia, with large percentages of population occupied in agriculture and living below the poverty line, capsicum is among the most important agricultural products. However, especially small-scale farmers face reduced sales due to market restrictions on low quality products. Many studies show that dried *Capsicum* especially is often contaminated with mycotoxins, secondary metabolites of microbes, which pose significant health risks to consumers. As fungal growth depends on moisture content, drying is a critically important postharvest process. The current practice is largely open-air sun drying of capsicum, a fruit with high water content, which allows for quick infection by microbes. Additional processing like milling can further increase contamination. Another aspect of *Capsicum* processing that addresses livelihood of local people is the high content of carotenoids that are responsible for the red colour. Carotenoids have an important role in human nutrition as they are metabolised to vitamin A after ingestion. In many developing countries vitamin A deficiency causes severe health problems and losses of up to 53 % of the initial carotenoid content during drying have been reported due to sensitivity to heat and UV radiation.

This study evaluated the prevailing postharvest system of the *Capsicum* drying in Peru and Bolivia with a focus on microbial contamination and carotenoid degradation. Drying processes of several locally grown *Capsicum* cultivars were observed and products were sampled at various postharvest points. Different quality parameters including moisture content, colour, microbial contamination, mycotoxin content and beta-carotene were determined by standard methods. By reverse analysis of the production chain, critical control points were identified where measures can be taken to improve product quality. As a result, recommendations for improved manufacturing practices are given. By analysis and optimisation of the current drying techniques, product quality can be improved and value increased, generating new market opportunities that can increase income of local farmers. Furthermore, increasing nutritional value and decreasing the presence of mycotoxins will contribute to the health and well-being of consumers of dried capsicum.

Keywords: *Capsicum*, drying, food safety, mycotoxins, South America, vitamin A

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