

Food performances, properties, digestibility & functionalities

Oral

Impact of pH and temperature on α -galactosides diffusion and degradation during steeping and cooking processes of chickpea, lentils, and beans

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Consumption of pulses becomes more and more important in the context of the climate change due to their low negative environmental impact. Their consumption is however often limited due to presence of α -galactosides, which are responsible to cause digestive discomfort. It is thus of particular interest to reduce the α -galactosides during the preparation treatment (steeping and/or cooking processes) of pulses. The kinetics of diffusion and/or degradation of α -galactosides under different preparation conditions (pH, temperature, and time) of chickpea, lentils, and beans were investigated. It has been observed that even a small pH range variation (between 4 and 6.5), has a great impact on both degradation and diffusion of α -galactosides in the studied pulses. As expected, the diffusion increased with temperature while the enzymatic degradation had an optimum at intermediate temperature, thus leading to a maximum loss of α -galactosides at 60°C for few hours (1-3 hours). Quite rapid steeping treatments (1-3 hours), at intermediate pH and temperature, can thus be proposed for dramatically decreasing α -galactosides contents of pulses (chickpea, lentils and beans) before final cooking.