

Study of the effects of ultrasonic treatment on canned products

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Legumes play an important role in the diets of many regions of the world. Soaking is a time-consuming part of the food processing of legumes. Soaking time varies from one bean variety to another, typically from 5 to 12 hours. The soaking of dry legumes is the bottleneck in production and determines the speed of the production line. Ultrasound treatment during soaking reduces the soaking process, as reported by Ghafoor et al. ultrasound increases the hydration speed of red kidney beans, but also faster for chickpeas. We did soaking at room temperature (25°C, control soaking) and with ultrasonic treatment. The applied ultrasonic treatment was 40 kHz and 300 W power, at 25 °C, respectively. The polyphenol-content of the resulting soaking water samples was determined using the Folin-Ciocalteu reagent and the antioxidant capacity was determined by spectrophotometry using the method of Benzie and Strain (1996). Canned legumes were sterilized in cans and the texture of finished products were investigated too. When we look at soaking, we obtain a reduction of 1.79% in ultrasonic soaking compared to control soaking. At the end of the two soaking methods, there is no significant difference in the polyphenol content of the soaking waters. A similar result was also detected when measuring antioxidant capacity. After ultrasound-assisted soaking, the finished product texture was softer. The finished product had a higher filling mass if the raw material was also treated with ultrasound during soaking. Ultrasonic treatment reduces soaking time and can significantly speed up industrial processing. After soaking, there isn't significant difference in polyphenol-content and antioxidant capacity of the soaking water. After sterilisation, the finished product stock became softer, which could mean that shorter blanching times could be sufficient [5], which would mean large energy savings.

Biography

Tamás Somogyi is currently pursuing his PhD at the Hungarian Agricultural University. Besides university, he holds the position of Quality Project Engineer at Bonduelle Central Europe Kft. in Hungary. His academic degrees include a master's degree in Food Engineering and a Bachelor's degree in Food Engineering. His expertise covers canning processes and digital image processing systems. Tamás provides active mentoring to the students and tries to pass on his expertise to them so that the students get to know food production technologies, especially canning technology, especially the development possibilities of technological processes. The success of Tamás's work is reflected in his winning of various scholarships and his 7 scientific publications. The notable scholarships are Cooperative doctoral training, New National Excellence Program (ÚNKP).

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