EFFECT OF ULTRASOUND AS PRETREATMENT IN OSMOTIC DEHYDRATION OF BEETROOT (Beta vulgaris L.)

L. Araceli Ochoa¹, Juliana Morales¹, Silvia M. González¹, J. Vicente García² and Blanca E. Esquivel¹

Beetroot’s (Beta vulgaris L.) are an important source of bioactive compounds such as betalains which provide health benefits. Osmotic dehydration is used to preserve this vegetable and ultrasound has been studied as pretreatment which has been associated to drying time reduction. It has been reported to increase the mass transfer during air and freeze drying. Thus, this work aimed toward the evaluation of ultrasound on osmotic dehydration as a previous step of the process. Pretreatment was applied by an ultrasonic probe at 10, 20 and 30 min, followed by osmotic dehydration using sucrose at 30, 40 & 50° Brix and 3, 5 h and 40°C, and convective drying at 60°C. Moisture loss, solids gain, color (L*, a*, b* y ∆E*), total pigments and texture were determined. Results showed that ultrasound treated samples had higher values of water loss (ML, 0.47 g/g) increasing at higher osmotic concentration agent while time of osmotic treatment did not affect this value. Solids gain (SG) was higher in ultrasound treated samples as treatment time increased, but this value being lower that control samples (samples without ultrasound, SG 0.28 g/g initial solids). Although color was not affected by the ultrasound treatment, there was difference with the control samples. Ultrasound treatment reduced total pigments value in a range of 40 to 48.4% compared to control samples. Texture was not affected by the ultrasound treatment. In conclusion, ultrasound treatment did not favor bioactive compounds preservation so, further studies are needed that can provide such protection.