



## **IX\_PP1\_Effect of ultrasound and chemical pretreatments on L-ascorbic acid of dried bell pepper (*Capsicum annuum*) studied by factorial design**

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Drying is one of the methods for the preservation of fruits and vegetables [1]. Peppers are still dried in open sunlight, although this method has many shortcomings (long drying time, microbial contamination, depending on weather conditions, final product of poor color) [2]. Deterioration of numerous nutrients, which occurs during drying, can be prevented by applying various pre-treatments and/or different drying methods [2–4]. The aim of this study was to investigate effects of different pretreatments and drying methods on L-ascorbic acid (L-AA) content in dried bell pepper. Effect of following parameters were studied: applied additive (0.25% citric acid, 0.25% potassium metabisulfite or their mixture), temperature, time, pH value of pretreatment solution, ultrasound pretreatment, pepper slices size, pepper mass and drying method (hot air-drying and freeze-drying). For organization of experiments fractional factorial design was used. Results showed that only the drying method significantly affects the content of L-AA after a month of storage. Freeze-drying was a better method for L-AA preservation. The interaction between the drying method and the size of pepper slices was also meaningful, although this interaction wasn't statistically significant. Better preservation of L-AA, for hot air-dried samples, was achieved with a slices size of 4×4 cm compared to smaller (2×2 cm) and larger ones (8×8 cm). In the case of freeze-dried samples, the slice size didn't affect the preservation of L-AA. The medium slices of the pepper fruit provided better penetration of the additives, which resulted in a better protective effect on L-AA during the hot air-drying. On the other hand, smaller pieces (2×2 cm) led to higher losses, probably due to the higher leaching of L-AA. Larger slices (8×8 cm) proved to be the most unfavorable for the preservation of L-AA (maybe due to less diffusion of additive during pretreatment and its later weak effect during drying).

### **References**

1. López, J. et al., *Food Bioprocess and Technology*, 2010, 3, 772-777.
2. Kamal, M. et al., *Journal of Food Science and Technology*, 2019, 56, 3185-3194.
3. Lučić, M. et al., *Journal of Food Composition and Analysis*, 2022, 111, 104598.
4. Wang, J. et al., *Food Chemistry*, 2018, 259, 65-72

### **Acknowledgment**

This work was financially supported by the Ministry of Education, Science and Technological Development of the Republic of Serbia (Contract No. 451-03-68/2022-14/200287, No. 451-03-68/2022-14/200116, No. 451-03-68/2022-14/200135 and No. 451-03-68/2022-14/200105).