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Neuro-fuzzy modeling to predict quality and microbiological parameters of partial-dried cherry tomato during storage: Effects of water activity, temperature and storage time

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In the study, osmotically dehydrated cherry tomatoes were partial-dried in an air-drying oven to water activities between 0.746-0.868. The resulting partial-dried cherry tomatoes were vacuum-packed and stored at 4-30oC for up to 60 days. Adaptive neuro-fuzzy inference system (ANFIS) was utilized to predict the quality and microbiological parameters of these partial-dried cherry tomatoes during storage. Satisfactory accuracies were obtained when ANFIS was used to detect the lycopene and total phenolic contents, color and microbial pollutions according to the statistical analysis. Through ANFIS modeling, the effects of water activity, temperature and storage time on the properties of partial-dried tomatoes were visualized. Generally, contents of lycopene and total phenolics decreased with the increase of water activities, temperature and storage time, while aerobic plate count and number of yeasts and molds increased at high water activities and temperatures. Overall, ANFIS approach can be used as an effective tool to study the quality decrease and microbial pollution of partial-dried cherry tomatoes during storage, as well as identify the suitable preservation conditions, which is of importance to the food industry.

Biography

Yongbin Han is a Professor of Nanjing Agricultural University. His research is focused on the functional components accumulation in plant food materials.

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Notes:

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