

Food Preservation, Not Perversion: Development of a New Preservation Method for Alimentary Products

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After analysing the different preservation techniques that exist up to this day, it can be said that a point has been reached in which they cannot totally fulfil the needs of our growing society. More than 30% of the world's food production is lost due to preservation problems and a lot of people die because of diseases related to a poor preservation and hunger. A machine that packages using a new preservation method based on ozone has been designed and built and its advantages on maintaining properties of products with and without preservatives have been validated compared to actual preservation techniques [vacuum-, modified atmosphere (MA)- and sealed tray (ST)-packaging]. Organoleptic characteristics and pH values were documented every five days for a month. Dilutions of products with and without ozone treatment were cultured in McConkey and Müller-Hinton agar for microorganism detection. Products treated with this system presented better results than with any of the actual preservation techniques. They maintained a more stable pH value throughout the experiment and the organoleptic studies were also favourable ($p < 0.02$, < 0.003 and < 0.0004 vs ST; $p < 0.007$, < 0.004 and < 0.001 vs MA for pH, smell and appearance, respectively). Besides, ozone-treated meat showed a reduction in the amount of microorganisms. With this preservation technique, products are preserved with less alteration of their original properties and there is a substantial reduction in the amount of microorganisms. The use of this technology could lengthen the expiry date and reduce the use of preservatives that may have harmful or unknown effects.

Awards Won:

Second Award of \$1,500

ASU Rob and Melani Walton Sustainability Solutions Service: Award of \$1,000