

# Ozone Technology: An Emerging Technique in Food Processing Industry



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## Opinion

Nowadays, an increasing attention is focused on the safety of foods and in particular on the intervention methods to reduce and eliminate the pathogens from the fresh products. Traditional technology utilizes water for sanitizing foods which has a limited effect in killing bacteria and other pathogens. Thus, an alternative treatment to improve the quality as safety of foods is being sort. The high demand of ozone in the food industry lies in the fact that ozone is much stronger than chlorine. Complementing the effectiveness, unlike other disinfectants, leaves no chemical residual and degrades to molecular oxygen upon reaction or natural degradation. Ozone has relatively short half-life and can be taken as an asset and a liability to practitioners. This is particularly true in treatment of drinking water where ozonation is done to enhance filtration and provide primary disinfection but requires the addition of chlorine as the terminal disinfectant to maintain a residual in the distribution system. Ozone destroys microorganisms by reacting with oxidizable cellular components, particularly those containing double bonds, sulfhydryl groups, and phenolic rings. Therefore,

membrane phospholipids, intracellular enzymes, and genomic material are targeted by ozone; these reactions result in cell damage and death of microorganisms. Ozone can be applied in an aqueous solution or gaseous phase to decontaminate food-contact surfaces, sanitize equipment, recycle wastewater, and decrease pesticide levels on fresh produce. The microbiological quality and shelf-life of vegetables, fruits, cheeses, eggs, nuts, and meats can be improved when these products are directly treated with ozone or stored in an ozone containing environment. The use of ozone in the gaseous phase helps in controlling mold and bacteria, both in the air and on the surface of the product. Several researches have shown that treatment with ozone appears to have a beneficial effect in extending the store life of fresh non-cut commodities such as broccoli, cucumber, apple, grapes, oranges, pears, raspberries and strawberries by reducing microbial populations and by oxidation of ethylene. There are tremendous ways to justify the fact that ozone technology is a new and emerging technology for the shelf life extension and reduction of post-harvest losses in fruits and vegetables.



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