Quality Control of Tomato Products and its Influenced by Some Technological Treatments on Reducing Pesticide Residues

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Abstract:

Pesticide residue in agricultural produce poses potential health risks to consumers, necessitating effective decontamination methods. This study investigates the efficacy of some commonly available technological treatments, 4% vinegar solution and 3% salt solution with and without sonication, in reducing pesticide residue on tomato fruits. The experiment involved exposing pesticide-contaminated tomato samples to all treatments for a duration of 10 minutes. Tomato juices, tomato puree and sun-dried tomato, prepared after sonication, also examined to study the reduction of pesticide residue. The research employed a quantitative approach, analyzing the residual pesticide levels using (GC-MS) before and after treatment with reduction percent reached to 100 % for some pesticide residue. Additionally, physical, and chemical properties were conducted to assess any potential impact on quality attribute of tomatoes fruits due to the treatments. Preliminary findings suggest that both the 4% vinegar solution and the 3% salt solution exhibit promising capabilities in reducing pesticide residue on tomato fruits. However, the extent of residue reduction varied between the two treatments. The results also indicated a differential impact on chemical content, highlighting the need for further investigation into the potential consequences on food safety beyond pesticide degradation.