

The influence of pretreatment on fried potato fingers quality

Prepared by: Bnar Shwan Ezaddin

College of Agriculture engineering science- Food Technology

Department

Supervised by : Dr.Nabil Hussain Rasul



Introduction

Deep-fat frying is a widely used method for processing foods, enhancing their flavor, taste, color, and crispness (Farkas and Hubbard, 2000). Finger chips, or French fries, are popular processed potato. Despite increasing demand for healthier options, fried foods remain popular, contributing to health issues like obesity and heart disease (Kang and Kim, 2016). Pretreatment techniques before frying aim to reduce oil uptake and improve quality (Galali, 2021). Additives like sodium chloride enhance taste, but high frying temperatures can lead to the formation of harmful compounds like acrylamide. During frying, potatoes undergo changes in sensory attributes and undergo processes like water evaporation, oil absorption, starch gelatinization, and protein denaturation.

Material and method

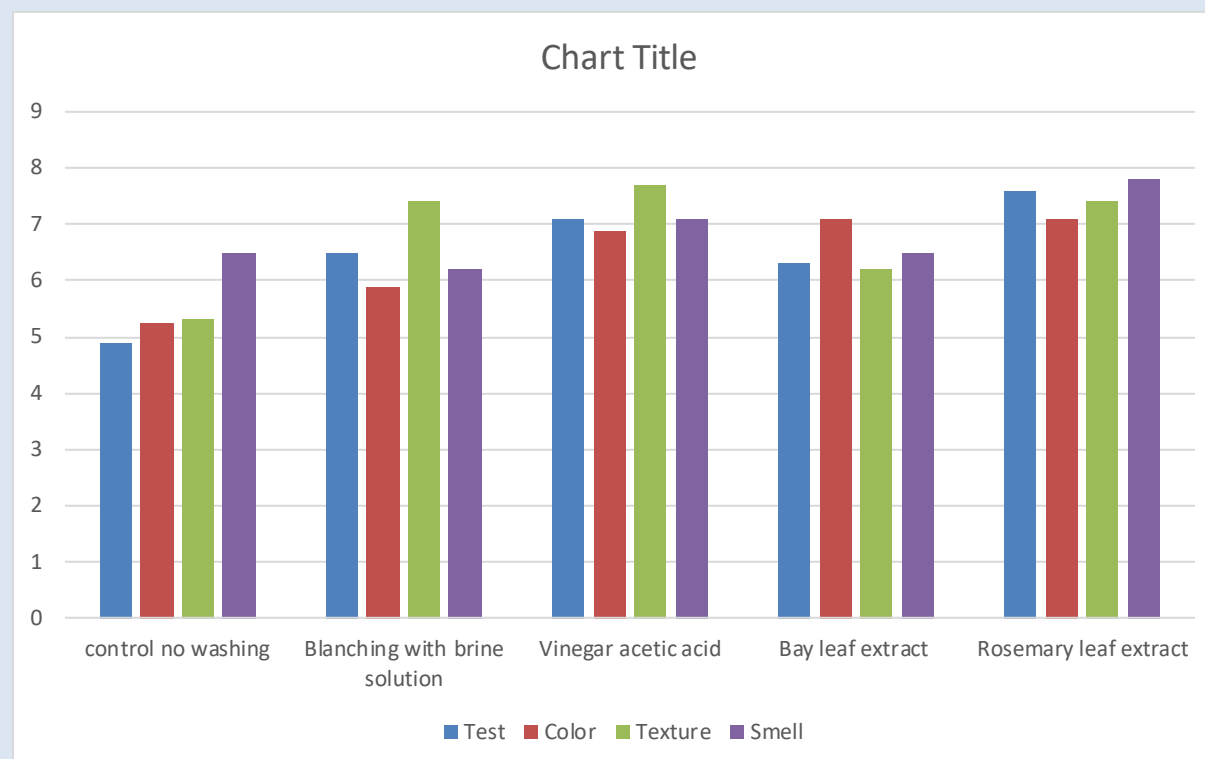
1. Materials were purchased from a local supermarket in Erbil

1. The appropriate variety of potatoes (*Solanum Tuberosum*) for frying harvested in 2023.

2. Sunflower oils, Sodium chloride, Acetic acid, Rosemary leaf and Bay leaf.

3. Stainless steels frying pans, Gas cooker and Finger Chips Cutter Machine. Method; Procedure for working steps are as follows;

Preparation, pretreatments, frying and sensory evaluation of potato fingers. Deep fry in sunflower oil at $180 \pm 5^\circ\text{C}$ for 5 minutes using stainless steel fryer pan. Conduct sensory evaluation with 16 people. Repeat the process, prepare identical samples, store in nylon bags in the freezer at -18°C for a week, then thaw, fry, and conduct sensory evaluation.

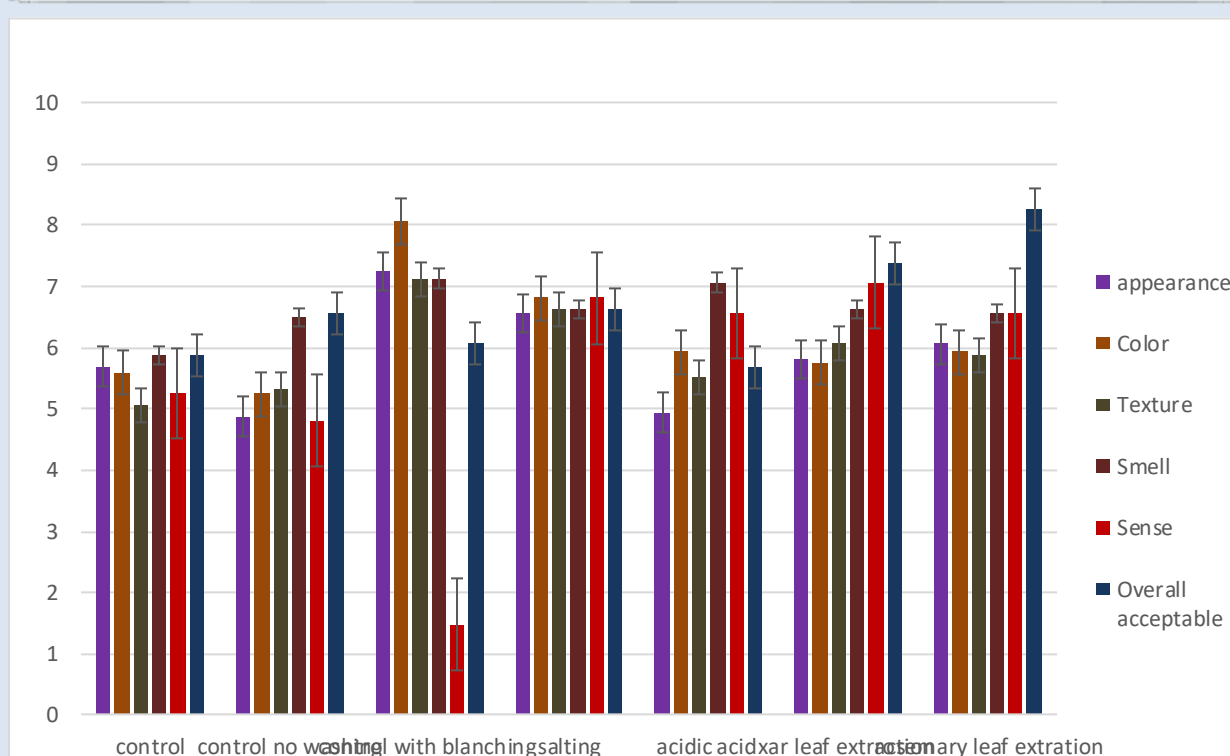


Result and Discussion

Results and discussion

The table, shows the sensory quality and characterize; Test, color, texture, and smell from pretreatment and control sample of potato finger chips. Test of potato finger chips treat with Rosemary leaf extract, higher 7.6 ± 1.26 compared to the control, Brine solution, Acetic acid and Bay leaf extract, was 4.88 ± 1.93 , 6.5 ± 1.96 , 7.1 ± 1.66 and 6.3 ± 1.5 respectively. Potato chips fried in the oil with added rosemary extract were more acceptable than chips fried in oil containing no extract until the last frying (Lalas and Dourtoglou 2003).

Table 2 summarizes sensory evaluation changes during frying, focusing on appearance, scent, and overall acceptability instead of taste. Blanching significantly improves the appearance of potato finger chips (7.25 ± 1.48), outperforming Brine solution (4.88 ± 1.93) and Acetic acid (6.56 ± 1.50). Water blanching maintains color, texture, and shape, yielding visually attractive chips. Evaluations concentrate on color, texture, scent, and overall appeal, with blanching demonstrating superior outcomes, consistent with previous findings. It also improves texture and preserves natural color. Bay leaf extraction exhibits stronger scent than blanching due to concentrated aromatic compound.



Conclusion

This study looked at the germs in shawarma sandwiches from fast food places in Erbil. It found no salmonella, which is good for food safety. But it did find *Staphylococcus aureus* and lots of APC bacteria, which shows there are still problems with keeping food safe in the industry.

Finding *Staphylococcus aureus* means we need to be more careful with hygiene and keeping food at the right temperature when making it. And the high levels of APC bacteria show we need to regularly check and control germ levels to avoid making people sick. We also need to teach people how to handle food safely. If people know more about food safety, they're less likely to get sick from eating shawarma.

To keep people healthy and keep shawarma popular, we need to make sure food safety rules are followed. Everyone involved – from cooks to customers – needs to work together to make sure shawarma stays safe to eat.

References

- Ahmed, A.M., B El-Hakem, N.A. and Ibrahim, G.A., 2015. Chemical and microbial assessment of beef and chicken shawarma sandwiches in Ismailia governorate and its impact on consumer health. *Egyptian Journal of Chemistry and Environmental Health*, 1(1), pp.686-693.
- APHA (2001): American public health association Committee on Microbiological Methods for Foods. Compendium of methods for the microb. exam. of foods. 4.ed. Washington.
- FDA, 2002: Food and Drug Administration. Bacteriological Analytical Manual. 9th Ed., AOAC International, Arlington, VA, USA.
- ISO, 6579, 2002 : Microbiology of Food and Animal Feeding Stuffs—Horizontal Method for the Detection of *Salmonella* spp..
- Nimri, L., Al-Dahab, F.A. and Batchoun, R., 2014. Foodborne bacterial pathogens recovered from contaminated shawarma meat in northern Jordan. *The Journal of Infection in Developing Countries*, 8(11), pp.1407-1414.
- ZAKI, N., NABIL, N., RAMADAN, H. and ELSHATER, N., 2017. Bacteriological and molecular characterization of some pathogens from fast foods. *Assiut Veterinary Medical Journal*, 63(153), pp.181-189.