

Comparative effect of chitosan, clove oil and their combination on the shelf-life of tomato (*Solanum lycopersicum*) and bell pepper (*Capsicum annuum*)

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INTRODUCTION & AIM

The perishability of tomatoes and bell peppers leads to significant postharvest losses due to biotic and abiotic factors that affect their quality, appearance and texture. The absence of adequate cooling and storage facilities is a primary contributor to these losses in the supply chain. To mitigate microbiological hazards and extend the shelf life of these culinary vegetables, it is essential to apply antimicrobial agents of biological origin and safe substances that can prevent moisture loss and drip formation. The study assessed the impact of using a clove oil emulsion, chitosan solution and their combination on extending the shelf life of tomatoes and bell peppers.

METHODS

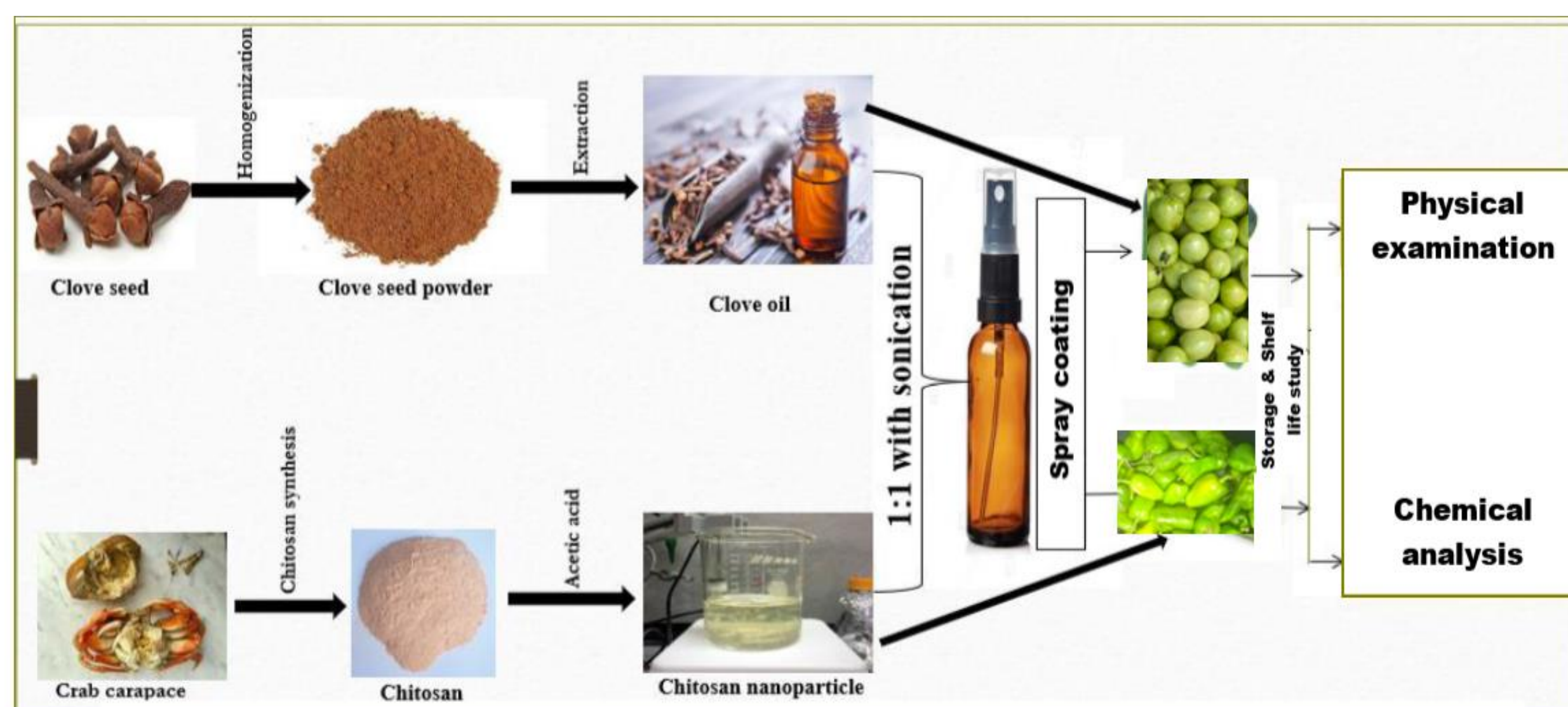


Figure 1. Flow diagram illustrating the process of coatings extraction and application, including the subsequent analyses.

RESULTS

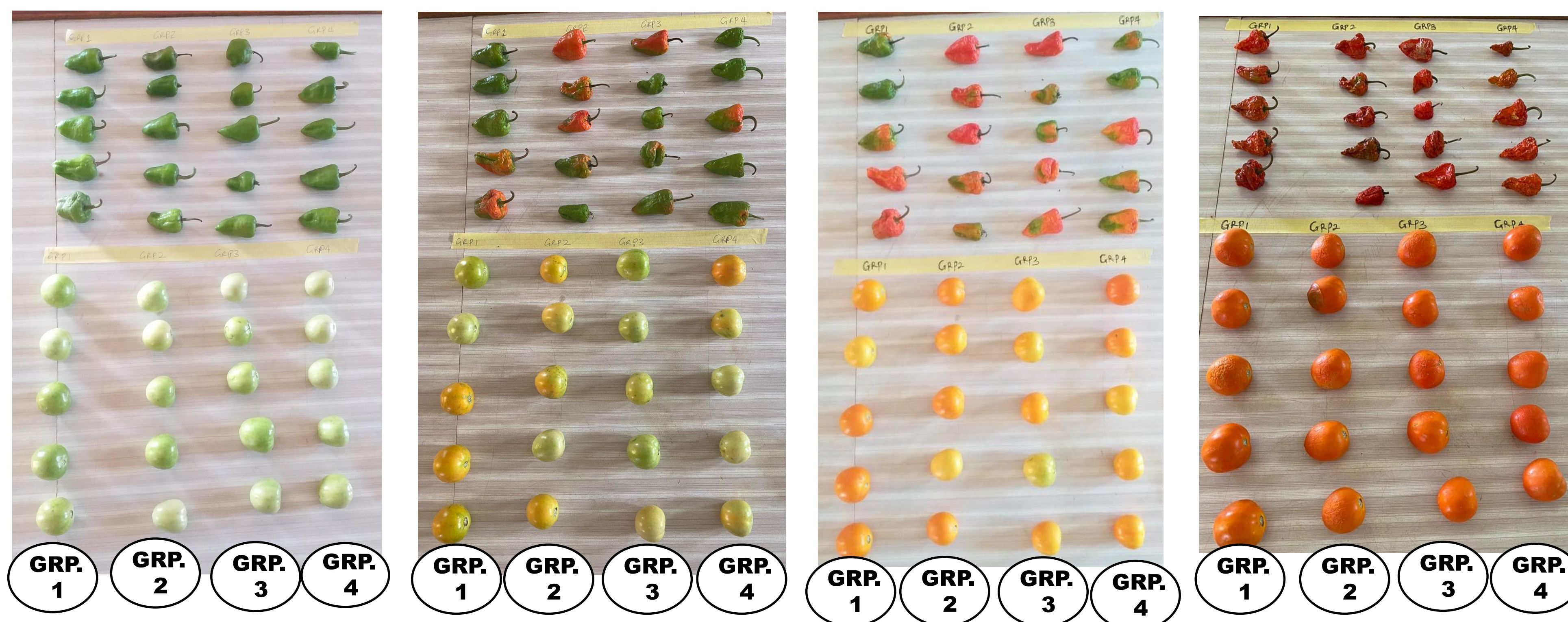


Figure 2. The ripening stages of tomatoes and bell peppers, progressing from left image to right over the course of 0, 10, 20, and 30 days. Grp. 1 was the control, Grp. 2 was treated with clove oil emulsion, Grp. 3 with chitosan solution, and Grp. 4 with chitosan-clove oil nanoparticles.

CONCLUSION

- The pH, total soluble solid, total sugar, reducing sugar and non-reducing sugar values for the treated samples did not reach optimal levels for spoilage during storage, unlike the untreated samples.
- Applying chitosan solution alone or combined with clove oil is valuable in reducing postharvest losses of tomatoes and bell peppers, offering new possibilities to the fields of food quality, food safety, and food security.

REFERENCES

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