

**CHEMICAL STUDIES ON NATURAL
ANTIOXIDANTS**

By

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ABSTRACT

Prevention of food spoilage in food industry and foodstuff is mainly based on the application of chemical preservatives. The adverse effects of these chemical preservatives on human health increases the demand to search for potentially effective, healthy safer and natural food preservative. The plant extracts which proved to be potentially effective as (*P. granatum* and *S. aromaticum*) can be used as natural alternative preventives to control food poisoning diseases and preserve food stuff avoiding healthy hazards of chemically antimicrobial and antioxidant agent applications.

This investigation was carried out to study the application of two volatile oil types (cinnamon and ginger) both normal and nanoparticles as antioxidant also in preparation and preservation of beef burger as well as quality attributes improvement.

In this study, thirteen different beef burger treatments were prepared by addition of cinnamon and ginger volatile oil either normal or nanoparticles at different concentrations (0.05, 0.1 and 0.15%). Beside beef burger treatment was prepared without addition (as a control). All of these treatments were frozen stored at -18°C up to 6 months, and evaluated chemically, physically and microbiologically every month.