

Comparison of the Antibacterial Activity of Soaps made from Essential Oils and Commercial Soaps Sold in the Lebanese Market

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ABSTRACT

Introduction: Thousands of people die every day in the world, following infections caused by bacteria. The hands are considered among the main routes of transmission of germs. Indeed, hand hygiene is the most important measure to prevent the spread of pathogens and to prevent bacterial infections. This is done by a simple and effective measure that is washing hands with soap and water.

Lebanon is one of a handful of countries known for soap production. One of the most elite manufacturers is the Eco-village of Bader Hassoun.

The aim of this study is to compare the antibacterial activity of soaps made from natural oils synthesized at the Bader Hassoun eco-village with commercial soaps sold in the Lebanese market.

Methods: Different types of herbal soap samples and antiseptics were purchased. The content and expiration date of all soaps have been noted. The soaps used in the following experiment were Dettol, Lux, Lifebuoy, Johnson, Palmolive, local soap (based on olive oil) and soaps made from natural essential oils (produced by the Eco-village of Bader Hassoun, Khan el Saboun).

Four bacterial strains were tested (*Staphylococcus aureus*, *Escherichia coli*, *Staphylococcus epidermidis* and *Pseudomonas aeruginosa*).

The antibacterial activities of these soap samples were determined by the diffusion method in agar medium (disk method).

Results: In this study, statistical analysis of zones of inhibition showed that soaps based on natural essential oils (Bader Hassoun Eco-village, Khan el Saboun) were significantly more active ($p < 0.05$) other soaps used against isolates of *Staphylococcus aureus* and *Pseudomonas aeruginosa*. The strain of *Escherichia coli* showed resistance against all types of soap used. The strain of *Staphylococcus epidermidis* was sensitive to all soaps used except Lux.

The result showed that *Staphylococcus epidermidis* was the most sensitive, followed by *Pseudomonas aeruginosa* > *Staphylococcus aureus* > *Escherichia coli*.

Discussion: Experiments made with soaps of natural essential oils showed a significantly higher antibacterial activity than so-called Antibacterial test soaps. This was determined only on a few strains. Indeed, their use could give a better effect than the soaps 'Antibacterial' available in the market.

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