

Analysis and documentation of SUPER PLUM Hand cleanser

The following analysis have been completed and described:

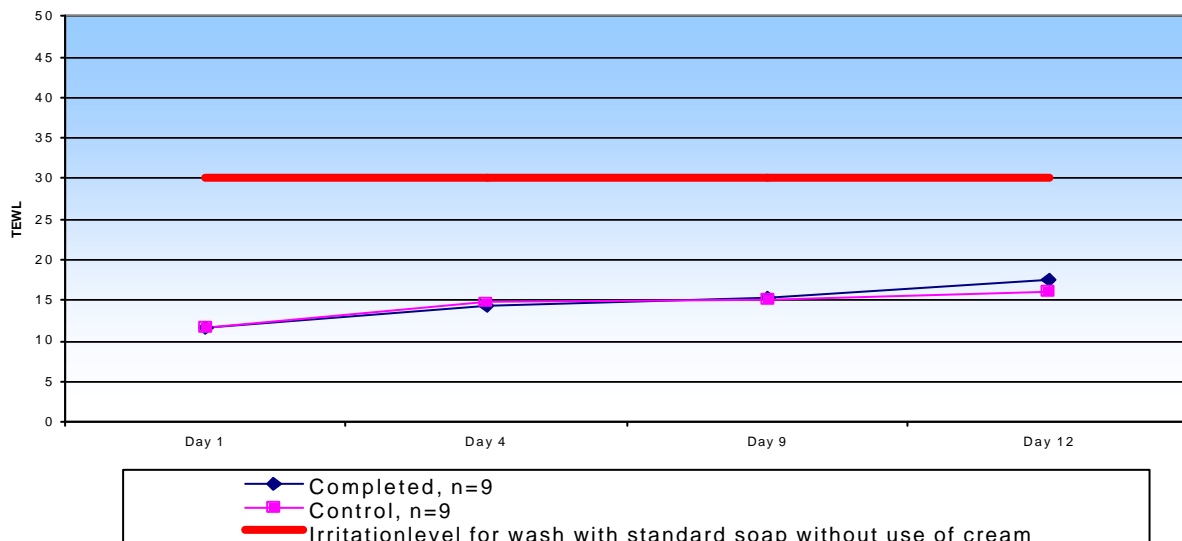
1. **The hand cleansers influence on the skin**
Super Plum is a very mild hand cleanser and will in all probability be tolerated by all users for a frequent hand wash.

2. **Hygienic conditions**
A mild hand cleanser as Super Plum can be use on equal terms with a soap containing a disinfectant remedy. .

1. The hand cleansers influence on the skin

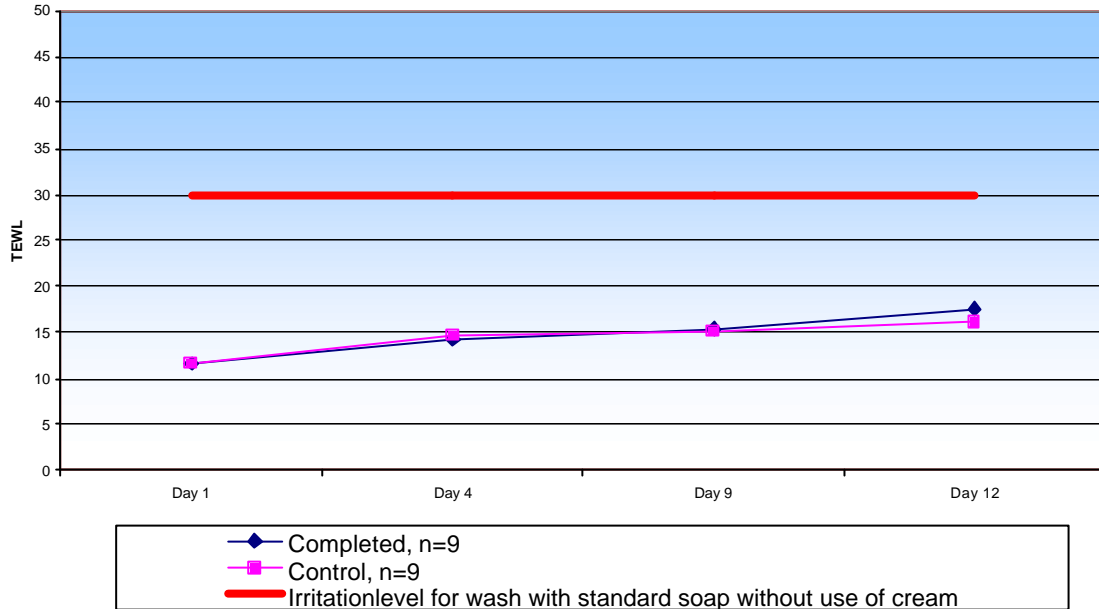
Super Plum's influence on the skins barrier function is documented in proportion to a situation with frequent hand wash, which means a situation where the hands are washed more than 15 times a day. The test is an elbow-wash-test method¹ where the subjects wash the skin in the elbow joint 4 times a day with a 2-hour interval. Since Super Plum contains an abrasive, a soft brush is used to achieve a uniform apply of the product. The test is performed over a period of 12 days where measurements are made on day 1, 4, 9 and 12. On these days the TEWL² (Trans Epidermal Water Loss) is measured and the skin condition is evaluated and stated with a score. The score is an expression of the observed visual skin condition combined with the subject's own experience of the skin (itching, blushing, blisters, desquamation, cracks etc.).

**Score for the wash with Super Plum
N=9**



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TEWL for the wash with Super Plum N=9



Conclusion*:

A frequent hand wash with Super Plum leads to only a minimal irritation of the skin in comparison to a frequent hand wash with a standard soap³. A frequent hand wash with a standard soap will normally lead to a TEWL of 30 or more among 30-60 % of the employees over a period of 2 weeks if a cream is not at their disposal. This corresponds an essential deterioration of the skins barrier.

* The test method is approved by The Scientific Ethical Committee and conducted in cooperation with Dermatologist Lars Halkier Sørensen

2. Hygiene conditions

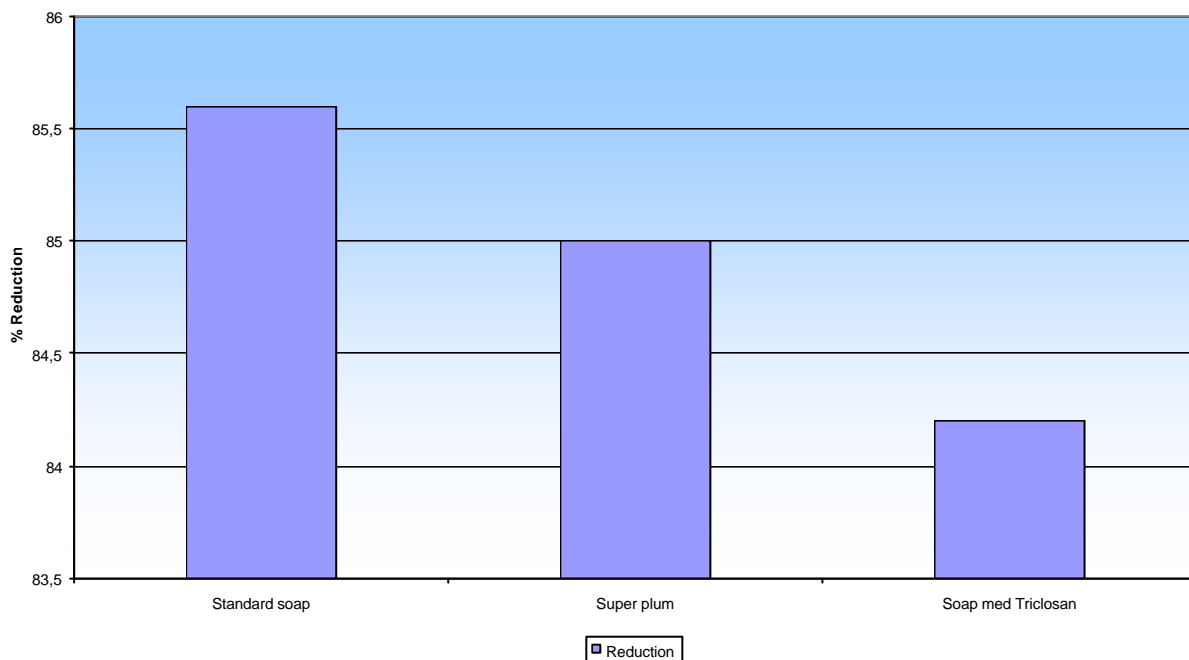
The hygiene effect when using Super Plum has been tested and documented after a method developed in a co-operation between KVL, MLI (The Royal Veterinary and Agricultural University (of Denmark), The Department of Dairy and Food Science) and Plum A/S⁴. The method is developed with the purpose to document the products hygiene effects in comparison to the handling of foods in practice.

The hygiene studies are carried out by letting the subjects handling a raw thaw chicken with clean hands after a certain and simple procedure. The bacteria flora on the hands was then measured A) after a 45 second contact with the chicken and 3 minutes air-drying of the hands and B) after a subsequently washing of the hands. The reduction is calculated as the difference in % between the situations A) and B).

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The diagram shows the reduction of bacteria when washed with respectively a standard soap, Super Plum and a soap containing 1% Triclosan.

The bacteria reduction



Conclusion:

Considering the statistic uncertainty of such results the conclusion must be that the hygienic effect is identical in all three situations.

The research proves that a mild hand cleanser as Super Plum can be used on equal terms with a soap containing 1% Triclosan. (Triclosan is classified with the mark N= dangerous to the environment). This means that there is no conflicting between the wish of maintaining a healthy skin condition while obtaining a good hygiene.

References/notes:

1. Instruction for the elbow-wash-test of Plum A/S
2. TEWL – a value for the water evaporation of the skin. Must be as low as possible and below 30.
3. Standard soap – a product compounded of typical soap ingredients without compensation for the skin irritating effect.
4. Accepted article to Journal of Applied Microbiology, 2003 by Tina B. Hansen and Susanne Knøchel, KVL,MLI.

On application to Plum A/S the references and test results above are available.