

BUS-Test

Plutect Dual & Plutect Care

What is a BUS test?

BUS (Bovine udder skin) = the skin from a cow's udder

A BUS test is performed to determine the protective effect of a protective cream. The BUS model is an *in vitro** model that is very similar to the *in vivo*** model because of the way it is performed.

In the BUS test, the udder from a newly slaughtered cow is isolated and rinsed with an oxidised solution (see Fig. 1&2). In this way, the skin cell functions of the udder are maintained for more than eight hours, which ensures reliable test results that can be compared with measurements and tests on human skin.

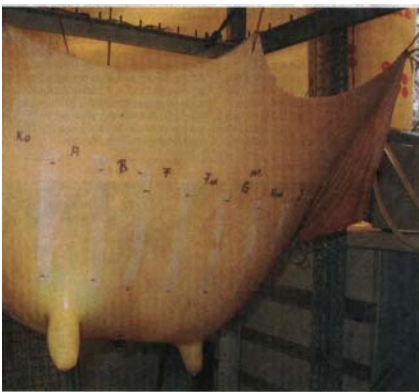
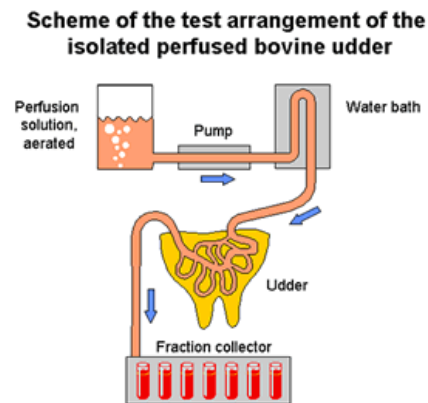


Fig. 1

The cow's udder is isolated and ready for use. The numbers and letters represent the products that are being tested.

Fig. 2

Graphical depiction of a set-up that shows the perfusion (flushing) of the bovine udder.



The harmful substance SDS (sodium dodecylsulphate = sodium lauryl sulphate) is applied to the udder and a biopsy taken at different intervals – after ½, 1 and 5 hours respectively. At the same time, biopsies are taken of untreated areas on the udder.

The test of the protective cream consists in applying the cream to the udder before the application of SDS and subsequently treating the udder in accordance with the above-mentioned method. The analyses undertaken after the periods of time stated assesses the extent to which the protective cream inhibits the harmful effect of SDS.

Compared with other test models that also use animal skin, the above model presents a decisive advantage; there is a strong similarity between human skin and the skin on a cow's udder.

* *In vitro* = (Latin for “in glass”) a test that is performed artificially in a laboratory.

** *In vivo* = (Latin for “alive”) a test undertaken with actual subjects (e.g. our own elbow wash test).

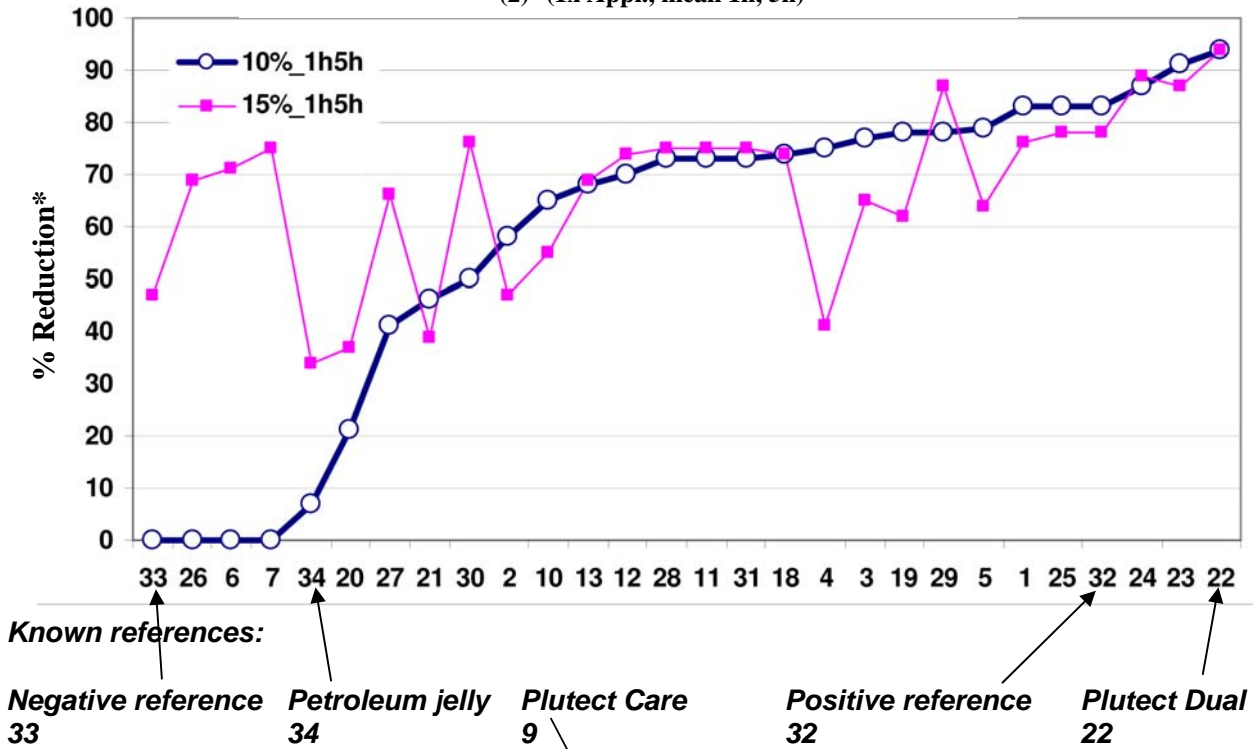
*** Biopsy = a medical test that involves removal and examination of cells or tissue from live organisms.

SUMMARY OF THE TEST OF *Plutect Dual & Plutect Care*

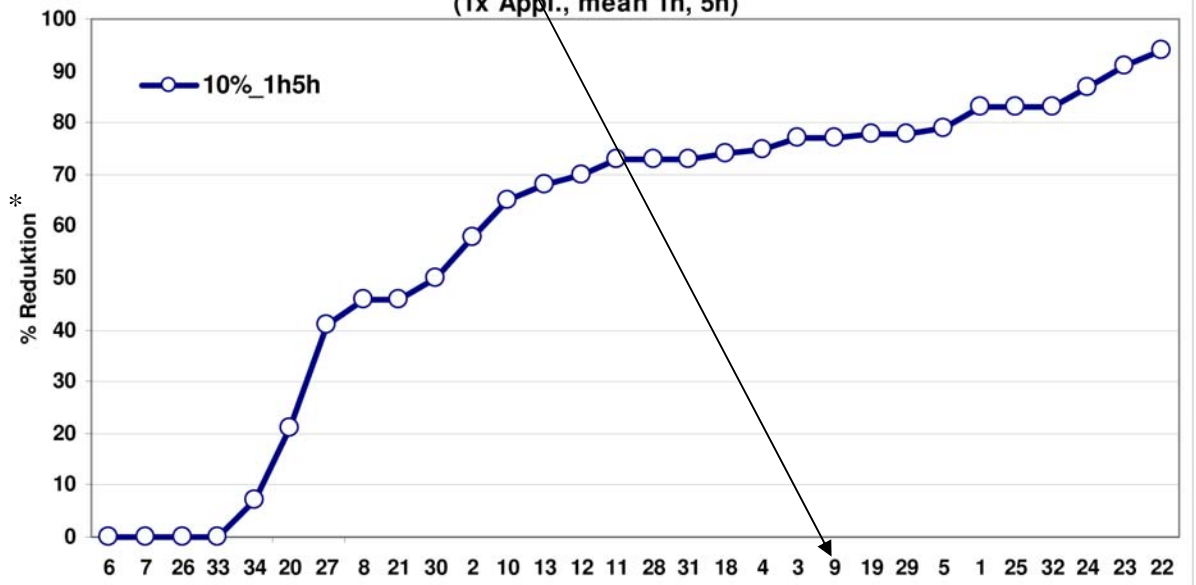
In the test, Plutect Dual and Plutect Care were tested together with 23 other competing products, whose identity was unknown to us. We know, however, that all the major German manufacturers were represented in the test. In addition to the above, the test also included a negative reference, a positive reference and petroleum jelly.

The figure below summarises the test results after one application of 10% and 15% SDS respectively. The measurements were taken after 1 and 5 hours of exposure, respectively.

(1) Bus test of effectiveness (28 tests) vs SDS_10%, 15%
(2) (1x Appl., mean 1h, 5h)



[1] BUS_Wirksamkeitstest (30 Proben) vs SDS_10%
(1x Appl., mean 1h, 5h)



* % Reduction

The measurement indicates the extent to which the cream protects against the harmful effect of SDS. The value is the average of the effect after 1 and 5 hours respectively.

Follow-up on the above-mentioned diagram:

33 - Negative reference

Has no limiting effect on the extent of the damage after application of 10% SDS, but shows a 46% limiting effect after application of 15% SDS.

34 –Petroleum jelly

Shows a minor limiting effect of less than 10% after application of 10% SDS. However, the limiting effect is increased to approximately 35% after application of 15% SDS.

9 – Plutect Care

Reduces the extent of the damage by 77% after application of 10% SDS.

32 – Positive reference

Reduces the extent of the damage by approximately 82% after application of 10% SDS and by 78% after application of 15% SDS.

22 – Plutect Dual

The test winner – reduces the effect by 95%– after application of both 10% SDS and 15% SDS.

Conclusion:

Plutect Care has been proven to be a stable and effective product that provides good, above average, protection compared with all other products examined in the test.

Plutect Dual has been proven to be a very effective and stable product that provides excellent protection. It reduces the harmful effect of SDS on skin by 95% and is the most effective of all tested products.

The above is a summary of the BUS tests of Plutect Care and Plutect Dual performed by Dr. W. Pittermann. The original documents are in German and are available upon request.