

A future role of objectifying skin cleansers

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Overview

- **Background**
- **Objectifying efficacy of skin cleansing**
 - *Challenges*
 - *Development of an in-vivo-model*
 - Automated Cleansing Device for skin cleansing (ACiD)
 - Model dirt and generic reference cleansers
 - Measurement of detergency
 - Measurement of skin compatibility
 - Validation of the model: multicentre study
- **Future role of objectifying skin cleansers**

Background

- **Occupational skin diseases**

- **Regulations**

“REGULATION (EC) No 1223/2009 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 30 November 2009 on cosmetic products, 2009”, Directive 76/768/EEC is repealed with effect from 11 July 2013

- **Manufacturers’ practice**

(Market survey; Terhaer et al 2010, JDDG, 8 : 806–811)

- **Project “In-vivo Evaluation of Skin Cleansing Products”**



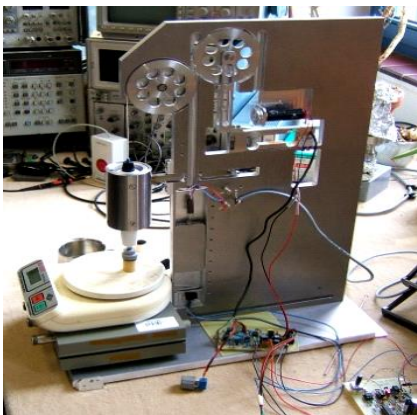
Challenges of objectifying skin cleansing products

- **standardisation of the cleansing process**
- **identification and simulation of occupational exposure & developement of model dirt**
- **development of standard generic reference cleansers**
- **development of an in-vivo model for measuring detergency**
- **development of an in-vivo model for measuring skin compatibility**



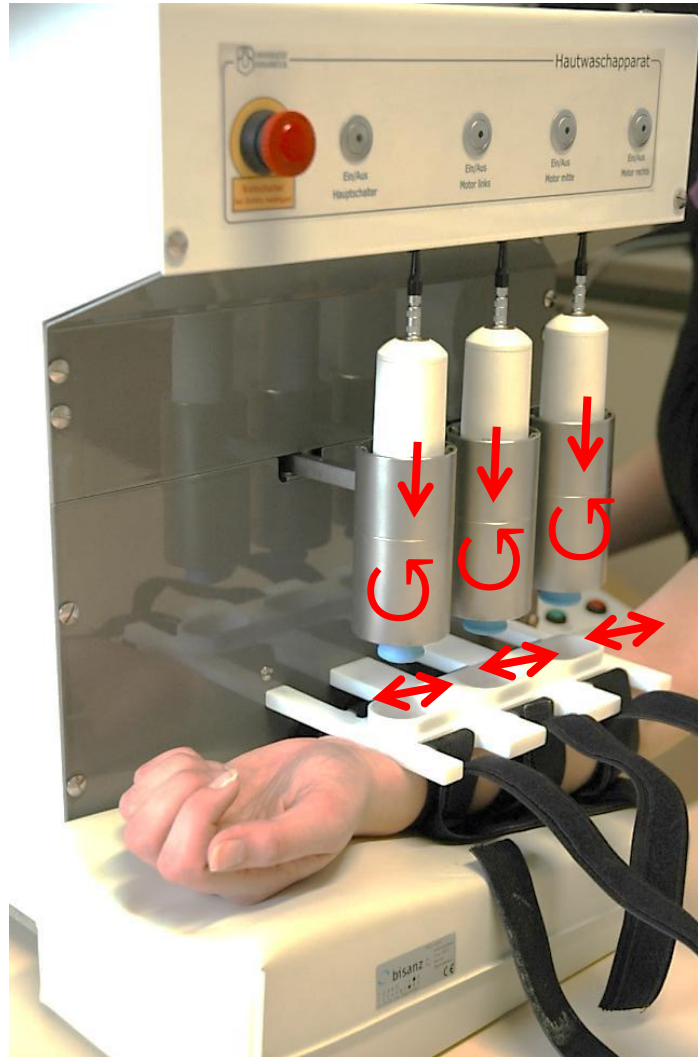
Development of an in-vivo-model *Automated Cleansing Device (ACiD)*

Steps of development



Development of an in-vivo-model *Automated Cleansing Device (ACiD)*

Working principle



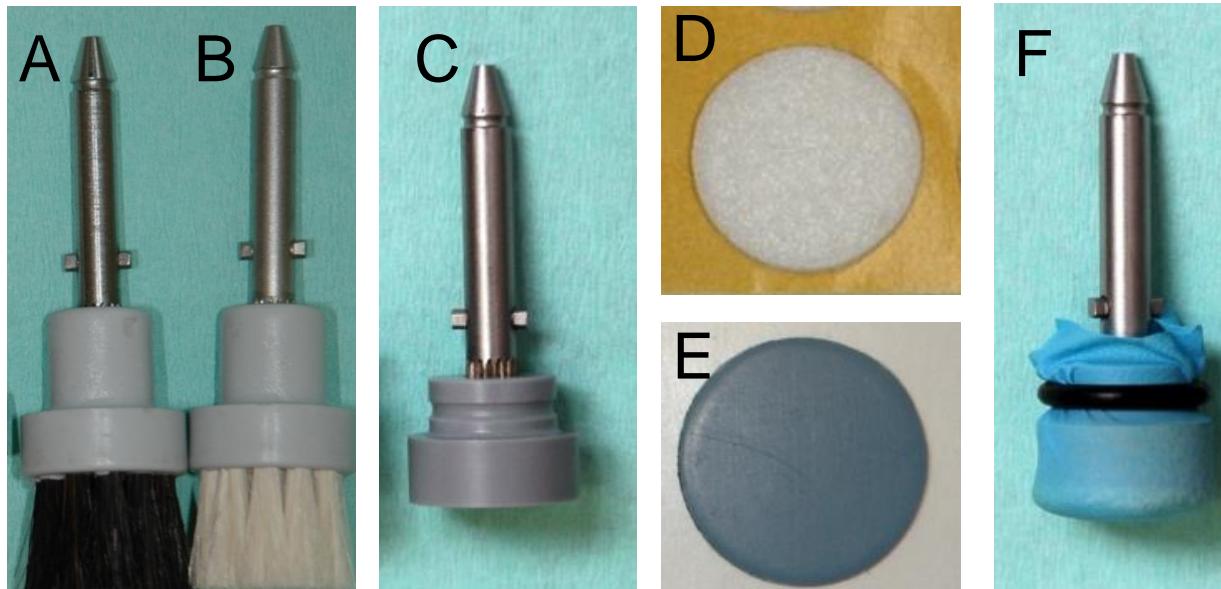
pressure: 5-150g

rotations/minute: 10-100

swipes/minute: 12

Development of an in-vivo-model *Automated Cleansing Device (ACiD)*

identification of an appropriate washing surface



Development of an in-vivo-model *Automated Cleansing Device (ACiD)*

identification of an appropriate washing surface

results



felt covered with nitrile turns out to be most suitable

- homogeneous washing results
- no false-positive cleansing results
- no influence on skin redness and TEWL



Development of an in-vivo-model

Model dirt and generic reference

Development of model-dirts*

1. *hydrophilic model dirt (type "mascara")*
2. *lipophilic model dirt (type "W/O cream")*
3. *paste-like model dirt I (type "waste oil")*
4. *past-like model dirt II (type "ointment")*
5. *film-forming model dirt I (type "disperse paint") and*
6. *film-forming model dirt II (type "acrylic paint")*

Development of standard generic reference cleansers*

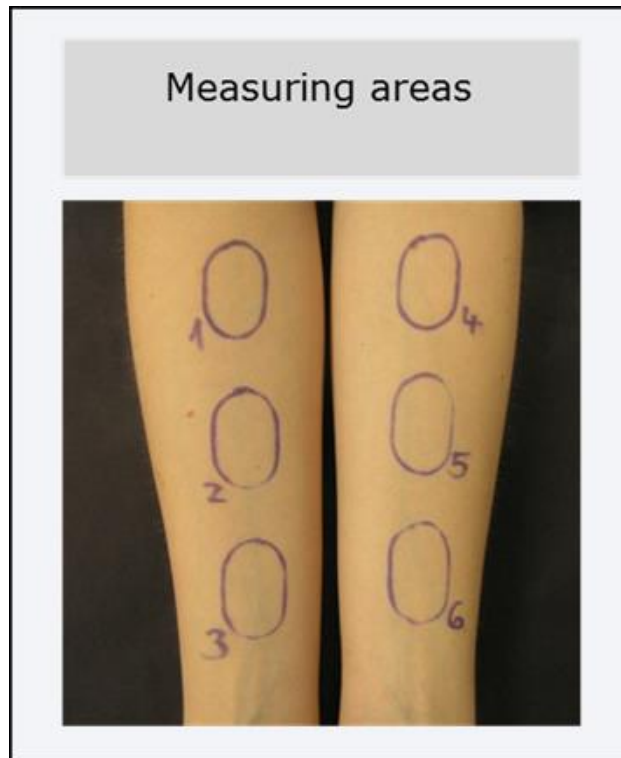
1. *"atopic cleanser"*
2. *"normal cleanser"*
3. *"cleanser with solvents"*
4. *"cleanser with friction particles"*
5. *"cleanser with solvents and friction particles"*

*galenic formulas by G. Kutz; validation by University of Jena (Elsner et al. 2013, Contact Dermatitis , 69: 245-50)

Development of an in-vivo-model

Skin-Cleansing Model

detergency



Elsner et al. 2013, Contact Dermatitis, 70: 35–43

Development of an in-vivo-model

Skin-Cleansing Model

skin compatibility

Day 1	Day 2	Day 3	Day 4	Day 5
acclimatization				
<ol style="list-style-type: none"> 1. drawing test fields 2. bioengineering measurements: TEWL, RHF, a*value 3. medical examination: visual score (redness, scaling, dryness, etc.) 				<i>final</i> examinations/ measurements
1. washing (using ACiD without soiling the skin)				
<i>2 hours</i>				
2. washing				
<i>2 hours</i>				
3. washing				

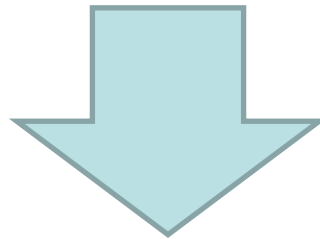
Development of an in-vivo-model

Validation of the model

multicentre study : 17.01.2011-18.02.2011

Centres: Jena, Heidelberg, Osnabrück (n=48; n/centre=16)

TEWL for quantification of *skin compatibility*
L*-value for quantification of *detergency*



Visualizing their relations (product labels)

Development of an in-vivo-model

Visualizing relations (TEWL - L*value)

Results of the multicentre study: Proposal for product labeling

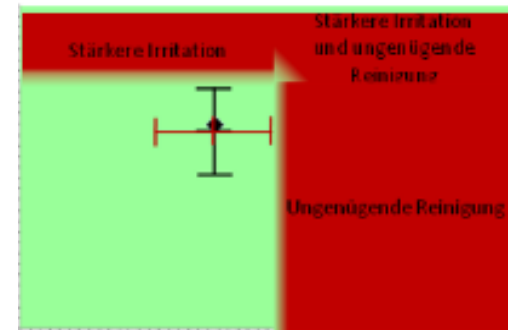
“mascara”/”atopic”



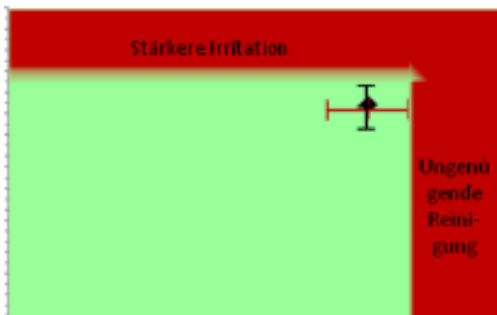
“disperse paint”/”friction particles”



“acrylic paint”/”special”



“ointment”/”solvents”



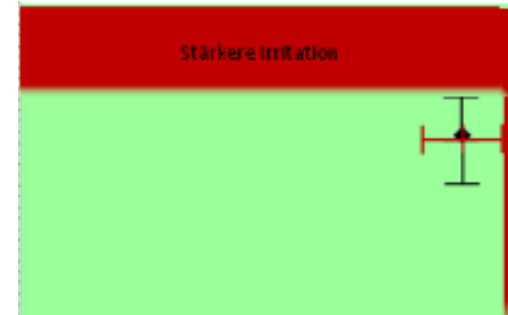
0 irritation [Δ TEWL, %] 20

“waste oil”/”normal”



100 detergency [%] 50

“w/o cream”/”normal”



Future role of objectifying skin cleansers

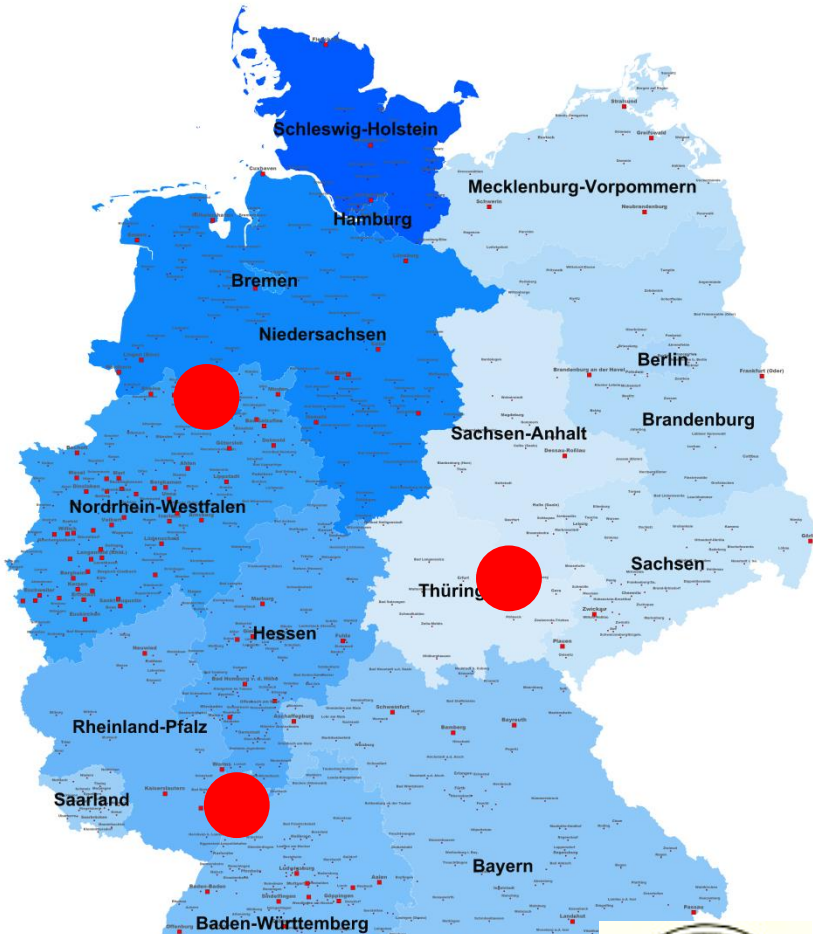
- **implementation of the model**
- **development of a standardized labeling system based on the model**
 - **market transparency for occupational skin cleansers**
 - **facilitating the rational choice of the most suitable product, putting cleansing effectiveness in relation to the potential for skin irritation**

Publications

- Sonsmann FK, Strunk M, Gediga K, John C, Schliemann S, Seyfarth F, Elsner P, Diepgen TL, Kutz G, John SM (2013): Standardization of Skin Cleansing In-Vivo: Part I. Development of an Automated Cleansing Device (ACiD). Skin Research and Technology, doi: 10.1111/srt.12112.
- Sonsmann FK, Strunk M, Gediga K, Schliemann S, Seyfarth F, Elsner P, Diepgen TL, Kutz G, John SM (2013): Standardization of Skin Cleansing In-Vivo: Part II. Validation of a newly developed Automated Cleansing Device (ACiD). Skin Research and Technology, DOI: 10.1111/srt.12113.
- Elsner P, Seyfarth F, Sonsmann F, Strunk M, John SM, Diepgen T, Schliemann S (2013): Standardized dirt for testing the efficacy of workplace cleaning products: Validation of their workplace relevance. Contact Dermatitis, 69: 245-50.
- Elsner P, Seyfarth F, Sonsmann F, John SM, Diepgen T, Schliemann S (2013): Development of a standardized testing procedure for the efficacy of workplace cleansers. Contact Dermatitis, 70: 35–43.
- Elsner P, Seyfarth F, Antonov D, John SM, Diepgen TL, Schliemann S (2013). Development of a standardized testing procedure for assessing the irritation potential of occupational skin cleansers. Contact Dermatitis, 70:151-157

Many thanks to

- **German Social Accident Insurance (DGUV) for funding the project „In-vivo evaluation of skin cleansers“**
- **our project partners**
 - Dept. of Dermatology, University Hospital Jena
 - Dept. of Social Medicine, Occupational and Environmental Dermatology, University Heidelberg
 - Dept. of Occupational Dermatology, Environmental Medicine and Health Theory, University of Osnabrück
- **Many thanks for your attention!**



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