



# Tolerability and acceptability of different alcohol-based hand-rub gel formulations

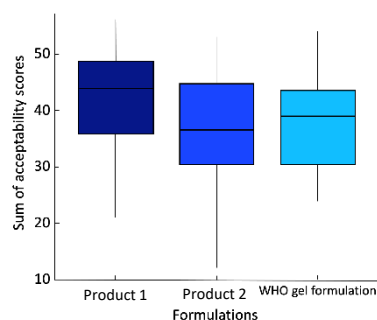
The parameter of tolerability is not congruent with the acceptance (and compliance) of an alcohol-based hand-rub (ABHR) gel formulation

Randomized laboratory trial

## STUDY RESULTS

### Acceptability

The overall scores showed differences with an advantage at H1.



### Overall preference

H1 was rated the favourite most often among participants.

Hand rub	Number of participants that rated the formulation as	
	Best	Worst
Product 1	19 (50.00%)	11 (28.95%)
Product 2	14 (36.84%)	14 (36.84%)
WHO gel formulation	5 (13.16%)	13 (34.21%)

## STUDY DESIGN

Three alcohol-based hand-rub gel formulations were tested



Isopropanol-based (Product 2)  
Ethanol-based (WHO)  
Ethanol-based containing superfatting agents (Product 1)

## STUDY PERIOD



2021;  
Intervention phase from Monday, May 17<sup>th</sup> to June 18<sup>th</sup>

## MEASUREMENTS

Measurements during intervention phase



Skin tolerability: objective assessment



Skin tolerability: self-evaluation



Acceptability



Ranking from best to worst

## MODE OF INTERVENTION



Three five-day intervention weeks



Each followed by a nine-day washout period



Participants donned gloves on their left hands when testing the formulations, so that left hands could serve as a control



Research for  
infection protection



## BACKGROUND

Beside efficacy, skin tolerability is an important property of hand hygiene products.

Because acceptability and tolerability are barriers to hand hygiene compliance, it is important to get to know more about the dermal tolerance of different hand rubs.

## GOAL

The aim of the study was to compare tolerability and acceptability of three different alcohol-based hand-rub gel formulations in an adult population in situations of heavy use.

## DESIGN AND METHODS

The study was performed in a laboratory setting by simulating intense frequency of ABHR exposure similar to conditions in clinical care by healthcare workers.

39 adult participants tested product 2, World Health Organization (WHO) gel formulation and product 1 in a random order.

Tolerability compared to baseline was evaluated as primary endpoint by two observers who scored:

- Redness (0-4)
- Scaliness (0-4)
- Fissures (0-3)

Participants self-reported their skin condition on:

- Appearance
- Integrity
- Hydration level
- Sensation

Secondary analyses were based on acceptability outcomes, i.e. participants gave feedback on the test formulation's acceptability including colour, smell, texture, irritation, drying effect, ease of use, speed of drying, application and overall evaluation.

## RESULTS

A total of 230 baseline and follow-up measurements, and a total of 574 hand-rubbing sessions were documented.

No statistically significant difference was observed regarding tolerability between the three ABHRs.

But the evaluation of the acceptability parameters showed significant differences: participants preferred

- smell of the product 2 and WHO gel formulations ( $P = 0.003$  and  $P = 0.040$ , respectively)
- texture of product 1 over the WHO gel formulation ( $P < 0.001$ )
- Product 1 overall in comparison to product 2 ( $P = 0.037$ )

### Acceptability in comparison ( $N = 39$ participants)

Characteristic	Product 1–Product 2		Product 1–WHO gel formulation		WHO gel formulation–Product 2	
	Estimate (95% CI)	P-value	Estimate (95% CI)	P-value	Estimate (95% CI)	P-value
Colour	-0.08 (-0.58, 0.41)	1	-0.16 (-0.66, 0.34)	1	0.08 (-0.42, 0.57)	1
Smell	1.44 (0.42, 2.46)	0.003	0.36 (-0.66, 1.38)	1	1.08 (0.06, 2.09)	0.040
Texture	0.97 (0.01, 1.93)	0.052	1.69 (0.73, 2.65)	0.0001	-0.71 (-1.67, 0.25)	0.244
Irritation	0.67 (-0.15, 1.48)	0.169	0.24 (-0.57, 1.05)	1	0.43 (-0.39, 1.24)	0.659
Drying effects	0.67 (-0.34, 1.69)	0.354	0.11 (-0.9, 1.12)	1	0.56 (-0.45, 1.58)	0.571
Ease of use	0.8 (-0.05, 1.65)	0.081	0.87 (0.02, 1.72)	0.050	-0.07 (-0.92, 0.78)	1
Speed of drying	-0.002 (-0.93, 0.94)	1	0.26 (-0.68, 1.20)	1	-0.26 (-1.20, 0.68)	1
Application	0.46 (-0.43, 1.35)	0.686	0.55 (-0.34, 1.45)	0.435	-0.1 (-0.99, 0.8)	1
Addition	5.08 (0.33, 9.83)	0.037	4 (-0.75, 8.75)	0.145	1.08 (-3.67, 5.83)	1

## CONCLUSION

The high variability of the participants' reactions to the different formulations highlight the importance of giving healthcare workers a choice between different high-quality hand rubs to ensure maximum acceptability.