

3D: RCTs comparing different application times with the number of CFUs on participants' hands as outcome

Authors, year reference	Type of study/ setting	Intervention	Comparator	Sampling technique	Primary outcome - CFU on participants' hands	Difference between groups
HOSPITAL SETTING						
Weber 2009 (34)¶	Switzerland RCT with crossover design 32 participants	Handrubbing with Sterilium® for 1.5 minutes	3 minutes	Fingerprints of both hands immediately after scrub and after surgery.	Mean (\pm SD) log ₁₀ CFU RFs immediately after application were 2.66\pm1.13 for the 1.5-minute group 3.01\pm1.06 for the 3-minute group ($P=0.204$). Sustained effect values were a mean (\pm SD) increase of 1.08 \pm 1.13 log ₁₀ CFU in the 1.5-minute group; 0.95 \pm 1.27 log ₁₀ CFU in the 3-minute group ($P=0.708$).	NS difference
LABORATORY SETTING						
Suchomel 2009 (35)¶	Austria RCT 21 healthy volunteers	Handrubbing with Sterilium® for 1.5 minutes	3 minutes	Fingerprints: one hand immediately, the other after 3 hours of glove use.	Mean (\pm SD) log ₁₀ CFU RF immediately after application were 2.86\pm1.3 for the 1.5-minute group; 3.43\pm1.23 for the 3-minute group . Sustained effect values: log ₁₀ CFU RF of 1.66 \pm 0.79 in the 1.5-minute group; 2.16 \pm 1.23 log ₁₀ CFU in the 3-minute group.	NS difference $P>0.05$
Suchomel 2009 (36)	Austria RCT 21 healthy volunteers	Handrubbing with isopropanol 70% v/v or n-propanol 60% v/v for 1 minute	3 or 5 minutes	Fingerprints: one hand immediately, the other after 3 hours of glove use.	Immediate mean log ₁₀ RFs with n-propanol or isopropanol were 1.05, 2.03 and 2.30 and 0.74, 1.48 and 2.12 , respectively, when applied for 1, 3 or 5 minutes , respectively. After 3 hours, the respective mean log ₁₀ RFs were 0.45, 1.01 and 1.60 and 0.19, 0.79 and 1.03.	Highly significant trend with increasing length of application $P<0.001$

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Suchomel 2011 ⁽³⁷⁾	Austria, RCT 20 healthy volunteers	Rubbing with ethanol 85% for 3 minutes	5 minutes	Fingerprints: one hand immediately, the other after 3 hours of glove use	3- and 5-minute log 10 RFs: 2.90±1.07 and 3.12±0.87, for 3 and 5 minutes, respectively, for immediate effect. Sustained effect: 1.78± 0.79 and 1,35 ± 0.82, respectively.	NS difference <i>P</i> >0.1
Babb 1991 ⁽³⁸⁾	UK, RCT cross-over design 24 healthy volunteers	Rubbing with isoproponol 70% for 30 seconds (after a 30-second hand wash with unmedicated soap)	2 minutes	Glove (with loose fitting gloves) juice method at baseline (3 times every 48 hours) after scrub and after 3 hours gloved	A 2-minute application of isopropyl alcohol 70% - log10 CFU reductions for immediate effect: 1.65 and 1.50 for 2 minutes and 30 seconds, respectively. Prolonged effect: 1.58 and 1.24, respectively.	NS difference (<i>P</i> not provided)

[‡]The studies comparing exactly the same product with the same outcome measure are included in the grade tables.

RCT: randomized controlled trial; CFU: colony-forming units; RF: reduction factor; NS: not significant; SD: standard deviation; v/v: volume/volume; UK: United Kingdom