

Alcohol and its effect on lipid viruses: an example of research synthesis for methods of decontamination

Description of studies: Seven studies that looked at the effectiveness of alcohol to destroy lipid viruses were eligible for inclusion in the review. Of these studies, five used HIV and two used *Herpes simplex* viruses.

Establishing a standard operating procedure: For this organism group, the best fit seemed to be 5 minutes contact at 20-25°C for a 70-80% solution (in water).

Assemble the evidence around this standard operating procedure: Five studies contained evidence for this procedure, one contained evidence against and the data from one study did not fit the standard (see table A below). One study did not support the effectiveness of this procedure, and the reasons for this are considered in the last column. One study did not fit in to this categorisation, and is detailed in table B

Table A

Indicator organism	Evidence for	Evidence against	Possible sources of heterogeneity
Lipid virus	Druce, 1995 Van Bueren, 1994 Corless, 1992 Croughan, 1988 Tyler, 1987	Hanson, 1989	a) type of outcome measured b) presence of contaminating protein Hanson measured HIV antigen titre (no reduction after 20 minutes). Corless also measured HIV antigen (in saliva) showing its destruction on the surface of a manikin after 40 seconds in isopropanol. Van Bueren showed destruction of HIV <i>infectivity</i> after 30 seconds using the same carrier test with ethanol. This increased to 10 minutes when test virus was dried in 100% serum. Croughan (suspension test) and Tyler (carrier test) used herpes simplex virus.

Table B Evidence outside of the standard procedure.

Study	Indicator	Outcome
Flynn, 1994	lipid virus	1 minute was the maximum exposure recorded. In this time, 70% solutions of ethanol and isopropanol gave a 4log reduction in the infectivity of an HIV suspension but could not produce a 5log reduction.

Summary

Standard procedure	5 minutes contact at 20-25°C for a 70-80% solution (in water)
Evidence for	5 studies
Evidence against	1 study
Other evidence	1 study with parameters outside of the standard reached

Comment on evidence: The evidence for effectiveness of this procedure against lipid viruses is good. Ethanol and isopropanol are the most effective alcohols. The 'Other evidence' also supports the effectiveness of alcohol against HIV, as its extrapolation suggests a sufficient level of kill would be reached after 5 minutes.

Critical points : the presence of organic load had no impact on alcohol's effectiveness (2 studies) but organic material that limited alcohol's access to indicator microorganisms (dried serum) did diminish its activity (1 study).