

The Anti-Viral Efficacy of a New Super-Oxidized Solution

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BACKGROUND: A pH neutral, super-oxidized solution (SOS), Microcyn[®], has been shown to possess *in vitro* antibacterial, sporocidal and antiviral activities. This study evaluated inactivation of enveloped and non-enveloped viruses exposed to Microcyn[®] as *in vitro* suspensions. Test viruses included poliovirus-1, rhinovirus-1A, herpes simplex viruses 1 & 2 (HSV-1 & HSV-2), influenza A H1, influenza A H3, West Nile virus (WNV), and feline calicivirus virus (FCV).

METHODS: Target cells selected for virus type were infected with either control- or SOS-treated viruses. Control virus (108-1010 plaque-forming units [pfu]) was exposed to 1 ml of saline for 10 min; then diluted in 1 ml of 10% serum supplemented culture medium. The virus-SOS mixtures were prepared with control-matched concentrations of the viruses exposed to 1 ml of SOS for 1 and 5 minutes; then diluted in 1ml supplemented medium for SOS inactivation. Cells in 48-well culture plates were infected with 300 µl control or treated viruses/well, then incubated for one hr at 36°C, 5%CO₂. At the end of the exposure period, all wells received additional medium. At 24-48 hrs post infection cells were examined for cytopathic effects.

RESULTS: For poliovirus-1, a log₁₀ reduction of at least 6 was reached after 1 min exposure to SOS vs. the control. Rhinovirus 1A was reduced by 8 logs after 1 min. For HSV-1 and HSV-2, log reductions of 6 were achieved after 1 min. For influenza-A viruses, there was at least a 7 log reduction after 1 min. WNV was reduced by 7 log after 1 min; and by 8 log after 5 min. For FCV, a 5 log reduction was seen after 1 min; and a 6 log reduction after 5 min. All values were at the limit of sensitivity for the assays.

CONCLUSIONS: Results demonstrate that the load of enveloped and non-enveloped viruses exposed to SOS for at least 1 min was reduced by a log₁₀ factor ≥ 5 . Under these conditions, a complete inactivation was achieved after 5 min of SOS exposure. In light of the significant antiviral activity of Microcyn[®], clinical applications should be investigated.