



Clinical Pharmacology & Toxicology Pearl of the Week

~ Ivermectin ~

Introduction

- ✓ Ivermectin is an antiparasitic drug that is used to treat several tropical diseases, including onchocerciasis (River blindness) and other helminthiasis.
- ✓ In addition, some topical forms of ivermectin are approved to treat external parasites like head lice and for skin conditions such as rosacea.
- ✓ Ivermectin has been shown to inhibit the replication of SARS-CoV-2 in cell cultures. However, pharmacokinetic and pharmacodynamic studies suggest that achieving the plasma concentrations necessary for the antiviral efficacy detected in vitro would require administration of doses up to 100-fold higher than those approved for use in humans.
- ✓ Even though ivermectin appears to accumulate in the lung tissue, predicted systemic plasma and lung tissue concentrations are much lower than 2 μ M, the half-maximal inhibitory concentration (IC₅₀) against SARS-CoV-2 in vitro.
- ✓ Ivermectin is not approved for the treatment of any viral infection, including COVID-19.

Human toxicity

- ✓ Ivermectin is a minor cytochrome P450 3A4 substrate and a p-glycoprotein substrate and inhibitor. Therefore, potential exists for drug interactions with medications metabolized through CYP 3A4
- ✓ Generally, well tolerated in doses meant for humans (i.e., 3-24 mg).
- ✓ Patients who used ivermectin in excessive amounts (either human or veterinary strength) and presented to hospital developed gastrointestinal distress, confusion, delirium, dizziness, headache, ataxia, weakness, hypotension and seizures.
 - When an ivermectin preparation containing propylene glycol was ingested, lactic acidosis was also present.
- ✓ Those patients who were kept at home by a poison centre had gastrointestinal distress, dizziness, confusion, vision symptoms, or rash.

References

1. Temple et al. NEJM 2021. DOI: 10.1056/NEJMc2114907
2. Rita Farah, Ziad Kazzi, Jeffrey Brent, Keith Burkhart, Paul Wax, Kim Aldy & On behalf of the Toxicology Investigators Consortium FACT Study Group (2022): Ivermectin associated adverse events in the treatment and prevention of COVID-19 reported to the FACT pharmacovigilance project, Clinical Toxicology, DOI: 10.1080/15563650.2022.2070187

The Clinical Pharmacology (CP) physician consultation service is available Mon-Fri, 8am-5pm. The on-call physician is listed in ROCA on the AHS Insite page. CP consultations are also available through Netcare e-referral and Specialist Link. You can also find us in the [Alberta Referral Directory](#) (ARD) by searching "Pharmacology" from the ARD home page. Click [HERE](#) for more details about the service.

The Poison and Drug Information Service (PADIS) is available 24/7 for questions related to poisonings. Please call 1-800-332-1414 (AB and NWT) or 1-866-454-1212 (SK). Information about our outpatient Medical Toxicology Clinic can be found in [Alberta Referral Directory](#) (ARD) by searching "Toxicology" from the ARD home page.

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