



PHARMACOKINETICS OF ^{125}I -LABELLED *WALTERINNESIA AEGYPTIA* VENOM AND ITS SPECIFIC ANTIVENINS: FLASH ABSORPTION AND DISTRIBUTION OF THE VENOM AND ITS TOXIN VERSUS SLOW ABSORPTION AND DISTRIBUTION OF IGG, F(AB')₂ AND F(AB) OF THE ANTIVENIN

M. ISMAIL, M. A. ABD-ELSALAM and M. S. AL-AHAIDIB

Antivenom and Vaccine Production Center, King Fahad National Guard Hospital, Riyadh
11426, Saudi Arabia

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M. Ismail, M. A. Abd-Elsalam and M. S. Al-Ahaidib. Pharmacokinetics of ^{125}I -labelled *Walterinnesia aegyptia* venom and its specific antivenins: flash absorption and distribution of the venom and its toxin versus slow absorption and distribution of IgG, F(ab')₂ and F(ab) of the antivenin. *Toxicol* **36**, 93-114, 1998.—A three-compartment open pharmacokinetic model best fitted the data obtained following the i.v. injection of the venom, toxin and the immunoglobulin fractions into either rabbits or mice. The venom and toxin, however, possessed pharmacokinetic characteristics that were significantly different from the immunoglobulin fractions. The venom and toxin had very highly significantly greater disposition rate constants to the shallow and deep tissue compartments and overall elimination rate constant from the central compartment than any of the immunoglobulin fractions. This was reflected in other pharmacokinetic parameters, including highly significantly smaller areas under the curve (AUC) and highly significantly greater volumes of the central compartment (V_c), shallow tissue compartment ($V_{1\text{ shallow}}$), deep tissue compartment ($V_{1\text{ deep}}$) and total body clearance (TBC). In rabbits, F(ab')₂ possessed the fastest disposition rate constants and the shortest distribution half-lives, while Fab showed the slowest disposition rate constants and the longest distribution half-lives. The same picture occurred in mice except that the values for Fab were between those of F(ab')₂ and IgG. The time needed by the venom and toxin to reach maximum tissue concentration (t_{max}) ranged between 7 and 15 min and 60 and 180 min for the shallow and deep tissue compartments, respectively. The immunoglobulin fractions required 8-26-fold these times to attain t_{max} ; F(ab')₂ was the fastest to achieve its maximal concentration. Following i.m. injection, very fast absorption of venom and toxin took place, with the toxin reaching t_{max} within 5-20 min and 90% of the injected dose absorbed within 60 min. The bioavailability factor (F) was 0.82 and 0.88 for the venom and toxin, respectively. Fab had an F -value of 0.36 and required 4.3 and 47.4-fold the time taken by the venom and toxin to achieve t_{max} . The calculated values of F for F(ab')₂ and IgG were 0.25 and 0.26, respectively. In the physiologically