Supannika Hantrakul 2014: Pharmacokinetics and Clinical Effects of Vincristine Sulfate in Dogs with Transmissible Venereal Tumor (TVT). Master of Science (Veterinary Pharmacology and Toxicology), Major Field: Veterinary Pharmacology and Toxicology, Department of Pharmacology. Thesis Advisor:
D.V.M. Saranya Poapolathep, Ph.D. 92 pages.

This study was conducted to evaluate the pharmacokinetic characteristics of vincristine and their correlation with its clinical effects in dogs with transmissible venereal tumor (TVT). Dogs with TVT were intravenously administered vincristine sulfate at a dose of 0.7 mg/m^2 of body surface area. Blood samples were collected starting from 5 min to 48 h after drug administration. The plasma concentration of vincristine was determined using liquid chromatography-tandem mass spectrometry (LC-MS/MS). The pharmacokinetic parameters of vincristine were characterized using a two-compartmental pharmacokinetic model. The volume of distribution, distribution half-life, elimination half-life, and plasma clearance were 0.66 ± 0.21 L/kg, 21.50 ± 6.90 min, 47.57 ± 14.23 min, and 0.01 ± 0.00 L/min/kg, respectively. The lower limit of quantification (LLOQ) of vincristine in the plasma was 0.5 ng/mL. Tumor regression was determined by a physical examination and histopathological analysis. Complete remission or complete response means that all of the tumors completely disappeared, and partial remission means that the tumors regressed more than 50% but less than 100%. In our study, three to eight administrations of vincristine at a dose of 0.7 mg/m^2 were able to induce complete remission in five dogs. Therefore, this investigation provides the pharmacokinetic characteristics of vincristine in dogs with TVT, which may be used as an integration tool to gain a better understanding of the disposition properties of the drug and the correlation of these properties with the drug's clinical effects. In addition, we validated the LC-MS/MS method and found that it is suitable for the pharmacokinetic study of vincristine in dog plasma.

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