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TITLE

PLASMA DISPOSITION KINETICS AND DISTRIBUTION OF TOLTRAZURIL AND ITS MAIN METABOLITE IN INTESTINAL TISSUES AND CONTENTS OF PIGLETS AFTER ORAL AND INTRAMUSCULAR ADMINISTRATIONS

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CONTENT

Background and objectives

Porcine coccidiosis caused by Cystoisospora suis is a major cause of diarrhea and poor growth in piglets worldwide. The most commonly used chemotherapeutic drug available for the control is toltrazuril, typically administered orally. Intramuscular injections of iron complexes are a common solution to prevent IDA. Recently, the first toltrazuril-iron based combination for injection has been developed for the concomitant prevention of coccidiosis and IDA in piglets (Forceris®, Ceva, France). This study aimed to evaluate, the disposition kinetics of toltrazuril and its main metabolite in the plasma and predilection tissues of Cystoisospora suis after oral (Baycox®) and intramuscular (Forceris®) application of toltrazuril in piglets.

Material and methods

56 piglets from 4 litters were included and randomly allocated to two treatment groups. Piglets in Group A were treated with Forceris® on the second day of life (24h+). Piglets in Group B were treated with intramuscular iron dextran on the second day of life (24h+) and oral toltrazuril on the third day of life (48h+). Samples were collected at 1, 5, 13 and 24 days post-treatment. Concentrations of toltrazuril and its active metabolite (toltrazuril sulfone) were determined by HPLC analysis.

Results

On overall, intramuscular application resulted in significantly higher and more sustained concentrations in plasma, intestinal tissue (ileum and jejunum) and intestinal content. Higher tissue concentrations after oral dosing were observed only immediately after dosing (Day 1). Remarkably, toltrazuril and toltrazuril sulfone accumulated more in proximal intestinal segment (jejunum), independently of the administration route.

Discussion & Conclusion

Drug concentrations at the predilection site of the parasite are important for its pharmacological effects. C. suis is an intracellular parasite affecting enterocytes in the jejunum and ileum. Higher and more sustained concentrations were observed following IM application, which may be responsible for its higher anticoccidial activity.