Pharmacokinetics and tissue distribution of amoxicillin in healthy and Salmonella Typhimurium-inoculated pigs

Objective—To determine pharmacokinetics and tissue distribution of amoxicillin in healthy and Salmonella Typhimurium-inoculated pigs. Animals—12 healthy pigs and 12 S Typhimurium-inoculated pigs. Procedure—Concentration of amoxicillin in tissue was measured by use of high-performance liquid chromatography 4, 8, 12, and 24 hours after IM administration. Pharmacokinetic values of amoxicillin in plasma were assessed by use of a 1-compartment model with first-order absorption. Results—Inoculation caused diarrhea and increased rectal temperature and WBC count. Absorption half-life was shorter in inoculated pigs (0.26 hours) than in healthy pigs (0.71 hours), and inoculated pigs had longer elimination half-life. Distribution ratios in healthy pigs ranged from 0.31 to 0.56 and in inoculated pigs ranged from 0.14 to 0.48. Ratios for distribution to intestinal mucosa ranged from 0.34 to 1.16 in healthy pigs and from 0.22 to 0.36 in inoculated pigs. Conclusions and Clinical Relevance—Salmonella Typhimurium inoculation altered absorption of amoxicillin from the injection site and prolonged elimination half-life. However, distribution of amoxicillin to intestinal tract tissue was only affected to a minor degree.