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Systemic Availability and Pharmacokinetics of Surfactin c in Rats

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Surfactin C isolated from Bacillus subtilis has a strong surface tension-lowering activity, together with antiviral, antitumor, fibrinolytic and hypocholesterolemic activities. Various pharmacodynamic activities for surfactin C have been demonstrated in vitro, but availability of this compound in the respective target organs has not been proven. Thus, investigation of absorption, distribution and excretion are necessary to provide the link between in vitro effects and in vivo studies. A newly developed LC/MS method for the determination of surfactin C was successfully applied in its pharmacokinetic analysis. The plasma concentrations of surfactin C following intravenous (i.v.), intramuscular (i.m.) and subcutaneous (s.c.) injection declined with a median elimination half-life of 0.65 h, 1.45 h and 1.64 h. The area under the time-concentration curve (AUC) was 57.38 μg·h/mℓ (i.v.), 1.27 μg·h/mℓ(i.m.) and 1.53 μg·h/mℓ(s.c.). Volume of distribution was 0.13 ℓ/kg and plasma clearance was 0.43 ℓ/h/kg. No surfactin C could be detected in plasma after oral administration. The short half-life, rapid clearance and poor bioavailability of surfactin C limit its potential use as a orally administered therapeutics.

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