

Publication

Arterial and venous pharmacokinetics of intravenous heroin in subjects who are addicted to narcotics

JournalArticle (Originalarbeit in einer wissenschaftlichen Zeitschrift)**ID** 167478**Author(s)** Rentsch, K M; Kullak-Ublick, G A; Reichel, C; Meier, P J; Fattinger, K**Author(s) at UniBasel** [Meier-Abt, Peter J.](#) ;**Year** 2001**Title** Arterial and venous pharmacokinetics of intravenous heroin in subjects who are addicted to narcotics**Journal** Clinical pharmacology and therapeutics**Volume** 70**Number** 3**Pages / Article-Number** 237-46

BACKGROUND: In Switzerland, medical prescription of heroin (diacetylmorphine) is currently being evaluated as a treatment option for heavily dependent addicts. Therefore the diacetylmorphine pharmacokinetics in opioid-addicted patients was studied. **METHODS:** Three different diacetylmorphine doses (up to 210 mg) and 20 mg deuterium-labeled morphine (morphine-d3) were administered intravenously to 8 heroin-addicted patients. Arterial and venous plasma samples were collected, and diacetylmorphine, monoacetylmorphine, morphine, morphine-3-glucuronide, morphine-6-glucuronide, and morphine-d3 plasma concentrations were measured by liquid chromatography-mass spectrometry. **RESULTS:** Maximal arterial concentrations of diacetylmorphine, monoacetylmorphine, and morphine were 2.4, 5.4, and 1.4 times higher and occurred 2 to 3 minutes earlier than maximal venous concentrations. Venous areas under the concentration-time curves (AUC) of diacetylmorphine and monoacetylmorphine were 35% and 26% lower than arterial AUC values, whereas for morphine the venous AUC was 15% higher. Morphine-3-glucuronide and morphine-6-glucuronide exhibited no arteriovenous differences. AUCs for diacetylmorphine, monoacetylmorphine, and morphine increased linearly with dose. Diacetylmorphine was completely metabolized to morphine. Substantial morphine input into the arterial circulation persisted for up to 90 minutes. The arterial clearances of diacetylmorphine, monoacetylmorphine, and morphine-d3 were 8.7 +/- 2.6, 6.7 +/- 1.6, and 2.3 +/- 0.3 L/min, respectively. The arterial half-lives of diacetylmorphine and morphine-d3 were 2.4 +/- 0.8 and 88 +/- 21 minutes, respectively. **CONCLUSIONS:** These data indicate that substantial arteriovenous differences exist for diacetylmorphine and metabolite kinetics, that the pharmacokinetics of diacetylmorphine and metabolites is linear even in the high dose range used by opioid addicts, and that not only diacetylmorphine but also monoacetylmorphine is substantially metabolized peripherally to morphine.

Publisher Mosby**ISSN/ISBN** 0009-9236**edoc-URL** <http://edoc.unibas.ch/dok/A5261652>**Full Text on edoc** No;**Digital Object Identifier DOI** 10.1067/mcp.2001.117981**PubMed ID** <http://www.ncbi.nlm.nih.gov/pubmed/11557911>**ISI-Number** WOS:000171196100006**Document type (ISI)** Clinical Trial, Journal Article