生物物理学报(2004) 20(5), 413-418

PDF文档

药物经皮转运通道的网络热力学模型

包家立*[1,2]、杨媛媛[1]、王红[2,3]、葛霁光[2]、王会平[1]
1 浙江大学医学院
2 浙江大学生命科学学院
3 杭州华大基因研发中心

阐述药物在经皮转运过程中皮肤通道导纳特性，为经皮给药技术提供理论和方法。用药物经皮转运通道的网络热力学模型建立药物浓度与渗透通量的定量关系，提出皮肤通道导纳由激活因子和失活因子控制的理论。以替硝唑为模式药物，进行被动扩散（对照组）和电脉冲增强扩散（实验组）的离体漏槽实验，结果显示皮肤通道导纳的理论线与实验值拟合较好。理论线计算的激活因子初值m0、激活因子时间常数tm、失活因子初值h0、失活因子时间常数th对分析皮肤通道特性有重要价值。

NETWORK THERMODYNAMICS MODEL OF PATHWAY CONDUCTANCE FOR DRUG TRANSPORT THROUGH SKIN

The pathway conductance properties of epidermis for transdermal drug delivery is expounded. Quantitative relationship of the drug permeable flux passing skin with pathway consistency of epidermis in side-by-side permeation chamber is described by network thermodynamics model. It is con-sidered that pathway conductance for drug through skin is regulated by activation and inactivation factors. From completed passive (control) and electrical pulse (experiments) experiments with Tinidazole, the re-sults showed that theoretical curves of pathway conductance of epidermis fitted very well with the data from these experiments. So the conclusion is that initial activation factor (m0), time constant of activation tm), initial inactivation factor (h0), and time constant of inactivation (th) are believed to be very impor-tant indexes for analysis of property of pathway conductance of drug transport through skin.

关键词