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Author	小股, 泰子(Komata, Yasuko) 稲岡, 美穂(Inaoka, Miho) 金子, 明子(Kaneko, Akiko) 藤江, 忠雄(Fujie, Tadao)
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In Vitro Percutaneous Absorption of Thiamine Disulfide from a Mixture of Propylene Glycol and Fatty Acid*

Yasuko KOMATA, Miho INAOKA, Akiko KANEKO, and Tadao FUJIE

小股泰子，稲岡美穂，金子明子，藤江忠雄

The in vitro percutaneous transport of thiamine disulfide (TDS), an oxidized dimer of thiamine, from propylene glycol through excised abdominal rat skin was studied. The application of saturated long-chain fatty acids (stearic acid (18 : 0), myristic acid (14 : 0), and lauric acid (12 : 0)) as enhancers to system was also studied. TDS permeated through rat skin from propylene glycol with a flux of 2.5 ± 0.8 $\mu g/cm^2/min$. The flux was enhanced 31 times by 12 : 0 and 1.4 times by 14 : 0, and was suppressed to 80% by 18 : 0. The absorption of TDS could not be explained by TDS permeation across a dialysis mambrane, but the iteraction between TDS and fatty acids may influence the system. The results show the possibility of developing a transdermal thiamine delivery system.

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