

## Assessment of salicylic acid systemic absorption after topical administration of trolamine salicylate on transcutol pre-treated skin in rat

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**Background and Aims:** It has been reported that Transcutol could enhance trolamine salicylate absorption through rat skin in vitro. This study was conducted to assess the effect of pretreatment with Transcutol on systemic absorption of topical trolamine salicylate in rat.

**Methods:** In pre-treated group (10 rats) Transcutol in the form of closed dressing was applied to the shaved surface of abdominal skin (12 cm<sup>2</sup>) of male wistar rats (235 ± 20g) for 12 hours. Subsequently, the close dressing was removed and then 1g of 10% trolamine salicylate was applied to the treated skin. Rats were under sleep condition (with phenobarbital) during the period of pretreatment with transcutol and of application of drug. In control group, trolamine salicylate was applied to the not-treated skin. Blood samples were taken from the tail vein up to 10 hours after application of the drug. Salicylic acid concentration in serum was determined using high-performance liquid chromatography with fluorescence detection at 297nm (excitation) and 407nm (emission). Chromatography was carried out on a C18 column using acetonitrile-phosphate buffer(pH 3)(13:87) at a flow rate of 0.5 mL/min. Extraction of salicylic acid was done using 100 µL of 35% perchloric acid and 300 µL of acetonitrile for 50 µL of serum sample. Comparison of area under the serum salicylic acid concentration-time curve post drug administration was done using Mann-Whitney test.

**Results:** Median (95% confidence interval) of salicylic acid AUC<sub>0-10</sub> (ng/mL/hr) values in Transcutol-treated rats was 2894(1684, 7364) as compared to the 5077(1401, 23933) of the control group. However, this difference could not be considered statistically significant. Inter-individual variabilities of AUC values were greater in rats that were not treated with Transcutol.

**Conclusions:** In opposite to the in vitro data, it seems that Transcutol does not lead to enhanced transdermal absorption of trolamine salicylate through rat skin.

**Keywords:** Trolamine salicylate; Transcutol; Transdermal absorption; Rat