

<原 著>

油性保湿剤配合炭酸ガス浴剤の保湿効果

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Moisturizing Effect of the CO₂ bath-additive Containing Oily Moisturizer

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Summary

We investigated the moisturizing effect of CO₂ bath-additive containing oily moisturizing substances, including cholesteryl isostearate (IS-CE), 1-isostearoyl-3-myristoyl-glycerol, hexadecyl 2-ethylhexanoate and petrolatum, by measuring skin surface conductance, skin roughness, weight of ³H-labeled IS-CE in guinea pigs stratum corneum, and the amount of ninhydrin-positive materials dissolved from the stratum corneum into bath water.

In 5 healthy male volunteers, skin surface conductance assessed using skin surface hydration meter at 25°C and 30% RH was significantly higher after CO₂ moisturizing bath than after control plain water bath (at 10 and 20 min., $p < 0.01$; at 60 min., $p < 0.05$).

In 4 female volunteers with dry skin on their lower legs, skin roughness score evaluated by visual observation was lower in the leg immersed in CO₂ moisturizing bath than that in the leg immersed in control plain water bath for 120 minutes.

In auricle specimens from guinea pigs immersed in ³H-labeled IS-CE in aqueous solution (i.e., CO₂ moisturizing bath) or in oil base containing only ³H-labeled IS-CE, total weight of IS-CE in the stratum corneum calculated using radioactivity count after tape stripping collection was significantly greater ($p < 0.05$) after immersion in the aqueous solution (67.1 pg/cm², $n = 4$) than after immersion in oil base (4.9 pg/cm², $n = 4$).

In the stratum corneum of the forearm of healthy male subjects pretreated with acetone/ether for 15 minutes then immersed in CO₂ bath with or without oily moisturizer, amount of ninhydrin-positive materials dissolved in the bath water as a measure of forearm amino acid release was, respectively, lower and equal to that in controls immersed in distilled water.

These results show that bath including CO₂ bath-additive containing oily moisturizer has highly moisturizing effect, and suggest that the mechanism of this effect may be rapid penetration of IS-CE into the stratum corneum and inhibition of dissolution of ninhydrin-positive materials from the stratum corneum.

Key words: Moisturizer, cholesteryl isostearate, penetration, conductance, CO₂ bath-additive