Synopsis of Original Research Paper

Study of the effect of weak electric current at iontophoresis on the skin tissue inflammation and safety

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Iontophoresis is a non-invasive transdermal drug delivery technology using weak electric current. Although iontophoresis is widely used in beauty field, its safety has not been investigated. From the previous our research, it was predicted that iontophoresis will induce inflammation via activation cell signaling. In this study, we tried to study the effect of weak electric current at iontophoresis on the skin tissue inflammation and safety. The skin cross section after iontophoresis was compared with non-treated skin. There was no difference in skin tissue between before and after iontophoresis. Furthermore, to check the inflammation induction by iontophoresis, the amounts of various mRNAs relating inflammation, such as tumor necrosis factor-α and interleukin (IL) -1β. Although statistical significant difference was not recognized, mRNAs of inflammatory cytokines was not activated by iontophoresis. Interestingly, anti-inflammatory cytokine IL-10 mRNA showed the tendency to increase after iontophoresis. From these results, it was suggested that iontophoresis does not induce any inflammation in the skin tissue. In conclusion, iontophoresis is safety technology for transdermal drug delivery and skin beauty.