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Effect of transdermal delivery of gelatins on the partial obesity in high fat diet induced obese rats

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Partial obesity is a constitutional disorder of fatty tissue deposit. It is not just a cosmetic problem due to the development of the metabolic syndromes. In the present study, we developed the new method to treat partial obesity by attachment of microneedles (MNs). In addition, the effects of gelatin on fat metabolism in adipocytes are addressed. Firstly, we applied MN to high fat diet (HFD) induced obese rats and examined rat amount of subcutaneous adipose tissue (SAT) by histological analysis and measured by micro-computed tomography (μ CT) scanner. Also, expression of genes-associated with lipid metabolism is analyzed in isolated adipocytes and SAT using Q-PCR and western blotting experiments. In addition, lipolysis was measured by determining the amount of glycerol released from adipocyte. In our results, histological analysis demonstrated that the amount of SAT stored in adipocytes was reduced by MN. For the next results, we found that administration of gelatin and MN suppressed the expression levels of lipid metabolism-associated genes in both the isolated adipocytes and rat SAT. In addition, glycerol release levels which is an indication of lipolysis, was also increased in isolated adipocytes. These findings suggest that MN induces lipolysis, leading to the release of glycerol and regulates lipid metabolism and fat deposition in the AT, thereby reduces SAT in HFD induced obese rats. Our results suggest that the alteration of lipid metabolism and fat deposition through the application of MN may help to reduce SAT.

Biography

Sung-Min An has completed his Master's course from Department of Biomaterials Science, Pusan National University, South Korea.

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