



Skin anti-aging and barrier repair effects of rose extract on reconstructed 3D epidermal aging model

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Introduction:

Due to its high efficiency and supplying sustainability, plant culture technology which is a promising alternative for production of high-value active ingredients from natural origins, has become an emerging trend for the cosmetics manufacturing. The 3D epidermal aging model can achieve a good similarity with aging human skin in structure and composition. This study is to conduct researches on the development of reconstructed 3D epidermal aging model to verify the anti-aging and barrier repair effects of rose extract (RE).



Materials & Methods:

In order to better explore the role of samples in anti-aging and skin barrier repair, this study used aging cells to construct a 3D epidermal aging model. Based on this model, immunohistochemical staining (Ki67) and immunofluorescence staining (Involucrin and Filaggrin) were used to evaluate the anti-aging function and barrier repair function of RE.



Conclusions:

Summarize the finding It can be seen from HE staining that R.G. can thicken the stratum corneum of the aging epidermal model and increase the number of particles in the granular layer. Through IHC and IF, we can know that RE can not only enhance the proliferation activity of basal cells by 400%, but also can significantly promote the aging epidermal model to strengthen the skin barrier. It can be used as a good raw material for daily chemical products, especially anti-aging products.

Aknowledgments:

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Results & Discussion:

1 HE staining of aging epidermal models

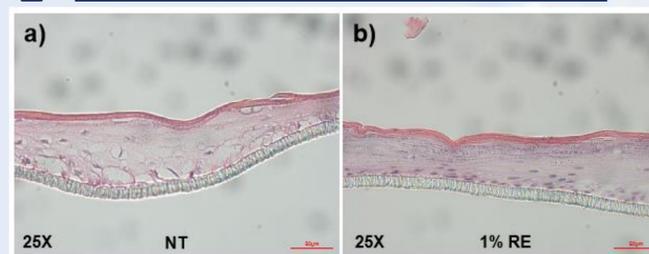
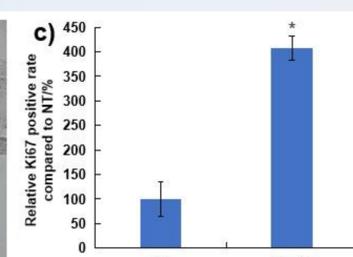
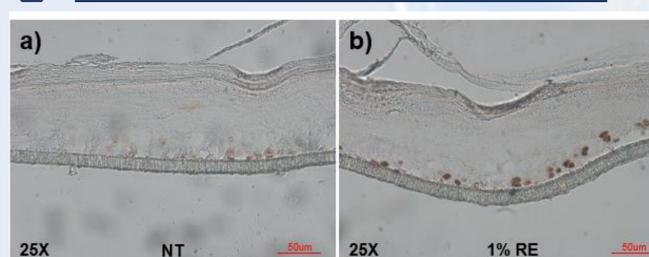


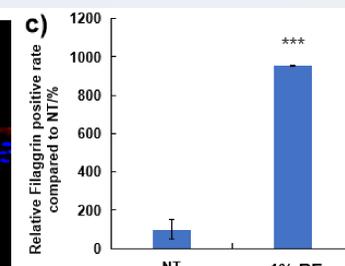
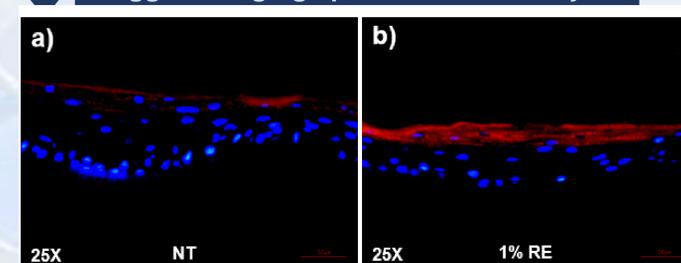
Figure b has a more complete stratum corneum and basal layer than Figure a, and the particles in the cytoplasm of the granular layer are evenly and densely distributed. It shows that RE has a better function of improving the skin barrier.

2 Ki-67 of aging epidermal models by IHC



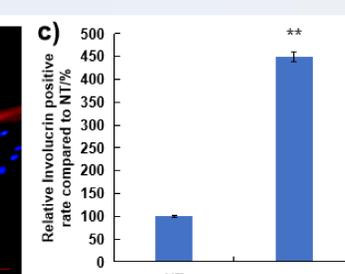
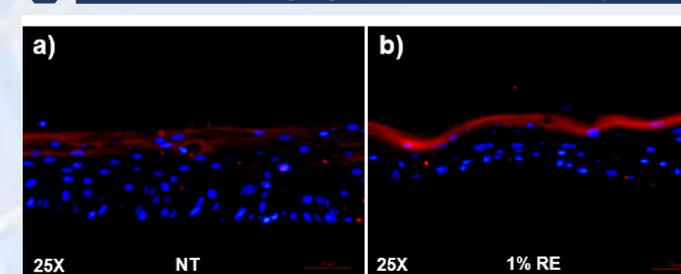
Ki-67 is a marker protein of the proliferation ability of Normal human keratinocytes, which are located in the basal layer cells. Ki-67 was significantly expressed in the basal layer of the aging epidermal models (Figure a) cultured with 1% RE, and the expression level was significantly higher than that of the non-treated group (Figure b). It can be concluded that RE can enhance the proliferation of basal cells after use, as an effect of anti-aging.

3 Filaggrin of aging epidermal models by IF



Filaggrin (FLG) is an important molecule that connects keratin fibers in the stratum corneum of human skin. Prevent the loss of epidermal moisture and the invasion of external allergic substances. By comparing Figure 3, It shows that by adding RE to culture the aging epidermal model, it can have a more complete skin barrier.

4 Involucrin of aging epidermal models by IF



Involucrin is one of the important marker proteins for the differentiation of normal human keratinocytes. It forms the unique stratum corneum barrier structure of the epidermis. By comparing Figure a and Figure b, it shows that RE can promote the differentiation of keratinocytes in the aging epidermal model to form a complete skin barrier.