

## Discovery of a New Approach to Skin Brightening

### ~ Reduction of the melanin in keratinocytes by inhibition of melanosome transport ~

KOSÉ Corporation has collaborated with Professor Mitsunori Fukuda of the Tohoku University Graduate School of Life Sciences to discover the novel approach for skin brightening. This work has recently led to the discovery that inhibiting the transport of melanosomes, which contain the pigment melanin, in melanocytes (cells that produce melanin pigments) is an effective means of preventing skin pigmentation.

We have developed various approaches to preventing skin pigmentation based on the investigation of the mechanism for pigment synthesis, which control skin color. In recent years, combination of some approaches to different process of skin pigmentation has been realized to be more effective for skin brightening. In addition, it is important how reduce the content of melanin in keratinocytes, which surround melanocytes in epidermis.

KOSÉ focused on the fact that skin pigmentation is caused by the transfer to keratinocytes of the melanin produced in melanocytes. We found that the inhibition of melanosome transport in melanocytes led to suppression of melanin transfer to keratinocytes. This joint research project also produced another important discovery. Coumalic acid can inhibit melanosome transport by reducing the protein level of Slp2-a, which is one of the melanosome trafficking proteins.

These discoveries are an enormous first step toward discovering a new means of maintaining skin brightening. KOSÉ plans to use this knowledge to develop new skin care products for preserving brightness. A number of patent applications have been filed in conjunction with this research. KOSÉ plans to make a presentation at the International Federation of Societies of Cosmetic Chemists (IFSCC) congress, which will be held October 6 to 9, 2008 in Barcelona, Spain, concerning this research project.

#### Explanation

- (1) A combination of the proteins myosin-Va, Slac2-a and Rab27A is associated with the movement of melanosomes within a cell. Once a melanosome nears the cell membrane, one part is replaced with a protein called Slp2-a. This anchors the melanosome at the membrane.
- (2) Melanosomes are distributed throughout cells that produce melanin. Adding coumalic acid inhibits the melanosome transport, thereby keeping melanosomes grouped tightly together at the center of the cell.

\*One of the conventional approaches is inhibiting the production of melanin by inactivating the enzyme tyrosinase, which catalyzes the production of melanin in melanosomes. Kojic acid, arbutin and other substances have been identified as tyrosinase inhibitors. These inhibitors are already used in cosmetics that help preserve the brightness of skin.

