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Skin Anti-Aging approaches: Potential targets for therapeutic agents and cosmetics

Skin aging, which is an inevitable and complex biological phenomenon of human life, is influenced by endogenous or intrinsic (e.g., chronological changes) and exogenous or extrinsic factors (e.g., chronic UV irradiation). These factors have been reported to cause the reduction of physiological functions and structural integrity in skin. For example, cellular metabolism and hormone production are significantly slowed down by chronological aging. In addition, the levels of extracellular matrices such as collagen, elastin, and hyaluronan in the dermis and epidermis are decreased by intrinsic and extrinsic stimuli, leading to the loss of tensile strength and elasticity and the lack of moisture to look saggy, dull, and dry. Furthermore, the cutaneous blood and lymphatic vascular systems have been impaired in intrinsically aged and photoaged skin, suggesting a mechanism of cutaneous aging disorders such as epidermal hyperplasia and dermal oedema. Moreover, as sebum from sebaceous glands has been reported to exhibit anti-photoaging activities against UVB irradiation, the aging-dependent decrease of sebum secretion might be associated with the aggravation of skin photoaging. Regarding the molecular mechanisms in intrinsically aged and photoaged skin, various cellular events such as oxidative and inflammatory reactions, protein carbonylation, and a decline in antioxidants have been reported to be involved. In conclusion, skin aging is likely to consist of various phenomena dependent on intrinsic and extrinsic factors, in which novel potential molecule(s) targeted for anti-aging and/or anti-photoaging agents and cosmetics might be involved.

Biography

Takashi Sato is Professor in the Department of Biochemistry at the Tokyo University of Pharmacy and Life Sciences, Tokyo, Japan. He received his PhD degree from Tokyo University of Pharmacy and Life Sciences in 1993. His research interest is molecular mechanisms of photoaging by UV and near infrared radiation (NIR), sebaceous disorders such as acne and xerosis, and drug/cosmetics development.

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