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**Study on the Physical and Biochemical Properties of Natural Antioxidant Polyphenols** HAYOUNG KYUNG, CHAEWON SEO, Choice Research Group — Recent studies have shown that oxidative stress, caused by an excess of the Reactive Oxygen Species (ROS) such as superoxide anion and hydrogen peroxide in the skin, is involved in the pathogenesis of this dermal disease. Epidemiological studies have shown ultraviolet (UV) radiation causes excessive induction of inflammation and oxidative stress. This causes, in turn, skin diseases including premature aging of the skin and gene damage, which is directly linked with skin cancers. In this paper, to inhibit or retard the process of these harmful chain reaction in the UV-exposed skin, study on the chemoprevention using chemopreventive agents, such as plant polyphenols that can inhibit the process was conducted. The chemical and physical properties of the polyphenols that may be useful for skin diseases associated with solar UV radiation-induced inflammation and oxidative stress were analyzed. Using computational programs, various information was extracted about molecules of polyphenols with functional groups. Optimization energies (kJ/mol) of the molecules were found and used to determine the characteristics and stability of the molecules while dipole moments (D) were used to determine the reactivity of the molecules.

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