

## **Biochemical Analysis of Physiological Activity of Citrus Peel Oil**

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Citrus peel essential oils are natural flavoring materials of commercial importance. The peel oil from each citrus variety not only adds much of the characteristic aroma and flavor to juice products made from that fruit but also has a physiological activity such as antioxidative action and inhibition of carcinogen formation. In order to elucidate the potential of citrus peel essential oils as a functional biomaterial, in the present investigation, I examined several in vitro biochemical activities of essential oils from 13 kinds of citrus fruits. Although yuzu essential oil did not covalently bind to human serum albumin (HSA), the presence clearly promoted the modification of glucose into HSA. The effect of the essential oil on the Maillard reaction partly resulted from the micro-environmental change around Trp-214 of HSA. The enzyme tyrosinase was significantly inhibited by some essential oils such as Eureka lemon, Lisbon and Kiyookadaidai. The comparison of the composition with others suggested the involvement of sabinene, neral, geranial, neryl acetate and geranyl acetate. Interestingly, these essential oils showed the remarkable superoxide anion-scavenging activity. The intensity of those activities showed no significant relationship with DPPH radical-scavenging activity. As the tyrosinase involves in melanin production, the result obtained by the present investigation indicates that some citrus peel essential oils might be applicable to the field of cosmetology.