

Functionalization of vitamin E to generate new cosmetics by biocatalytic and chemical methodology

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Vitamin E functions as a chain-breaking antioxidant that prevents the propagation of free radical reactions. Recently, vitamin E has attracted much attention clinically because of its potential to be a very useful drug, and has been widely studied for its anticancer, anti-atherosclerosis, and anticarcinogenesis effects. On the other hand, vitamin E is unstable against light and heat. Chemical modifications such as esterification of unstable organic compounds are characteristic reactions, which improve their stability, bioavailability, and pharmacological properties, e.g., the esters of aromatic compounds have been used in folk medicines. To overcome the shortcomings of vitamin E, several efforts have been made to synthesize vitamin E derivatives by chemical methods. However, little attention has been paid to the biocatalytic modification of vitamin E by cultured plant cells. We attempted the functionalization of vitamin E by its modification through both biocatalytic and chemical procedures.