Inhibitory effect of silymarin on melanin biosynthesis in cultured B-16 melanoma cells induced by UVA and UVB

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Abstract

Silymarin is an extract of the milk thistle plant, silybum marianum. Silymarin was reported to have strong antioxidant effects. Topical treatment of silymarin also resultes in significant reduction of the number if UVB-induced H_2O_2 producing cells and inducible nitric oxide synthase expression cells concomitant with decrease in H_2O_2 and nitric oxide.[1] Silymarin prevented lipid peroxidation, inhibited copper induced low-density lipoprotein oxidation, and scavenged reactive oxygen species (ROS). Melanogenesis of skin melanocytes is known to be influenced by various factors. Recently, ROS was reported to play a role on the melanogenesis of melanocytes after ultraviolet (UV) irradiation.[2] In this study, we investigated the effect of Silymarin on the induction of melanin in cultured B16 mouse melanoma cells irradiated by UVA and UVB. Melanin content of B16 cells was significantly increased by UVA or UVB irradiation. The melanin induction was abolished by mannitol and particularly by superoxide dismutase, suggesting the involvement of free radicals in the biosynthesis of melanin in cultured melanoma cells.[3] The induction of melanin caused by UV irradiation was suppressed by silymarin. To elucidate the mechanism of this suppressive effect, the free radical scavenging activity was examined. DPPH spectrometric analysis showed that silymarin showed strong free radical scavenging activity compared to that of Vitamin C in vitro test. We has concluded that silymarin effectively inhibits the melanin biosynthesis in B16 melanoma cells induced by reactive oxygen species (ROS) generated by UV irradiation.

References

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