Anti-inflammatory effects of Antrodia camphorata, an herbal medicine, in a mouse skin ischemia model.

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ABSTRACT
Ethnopharmacological evidence: Antrodia camphorata, a highly valued polypore mushroom native only to Taiwan, has been traditionally used as a medicine for anti-inflammation.

Aim of the study: In this study, anti-inflammatory effects of A. camphorata (AC) and its active compound, ergostatrien-3β-ol (ST1), were investigated in a mouse skin ischemia model induced by skin flap surgery on the dorsal skin.

Materials and methods: A U-shaped flap was elevated on the dorsal skin of the nine-week-old male mice. Mice were randomly assigned to six groups for treatment (n = 6) including normal skin/propylene glycol (PG), surgical skin flap/PG, solid-state-cultured AC (S/AC), wood-cultured AC (W/AC), high-dose ST1 (H-ST1), low-dose ST1 (L-ST1). A. camphorata was dissolved in 25 L PG and smeared on the skin flap every six hours for 24 h. At the end of the experiment, each mouse was anesthetized, and skin tissues were collected from their back for histopathological analysis, extracting RNA and protein according to our previous reports.

Results: Skin-flap-induced ischemia damage significantly increased the expression of the iNOS, COX2, and IL-6 proteins and decreased the expression of IκB protein. In addition, focal, moderate coagulative necrosis with inflammatory cell infiltration was found in the epidermis, and moderate inflammatory cells and necrosis with slight edema was noted in the sub-dermis at 24 h after skin flap surgery. However, treatment with solid-state-cultured or wood-cultured AC, or with its derived ST1 active compound, significantly reduced the necrosis and inflammatory cell infiltration in both the epidermis and sub-dermis of the skin flap. The treatments also reduced the inflammatory response by decreasing the expression of inflammation-related genes including iNOS, IL-6, TNF-α, and NF-κB, as shown by changes in RNA and protein expression, when compared with the surgical skin flap procedure alone.

Conclusions: These results demonstrated that meth...