Sairei-to, a traditional Japanese herbal medicine, inhibits UVB-induced skin inflammation

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[Introduction] Ultraviolet (UV) radiation, especially UVB (280-320 nm) from sunlight, is one of major environmental hazard to induce skin damage. A single high dose UVB exposure on the skin causes the acute inflammatory reaction which is characterized by erythema, increasing vascular permeability and edema formation. The single UVB-induced damage could be accumulated by chronic UVB irradiation. The accumulated skin damage could lead to skin aging and raise the risk of skin cancer. Therefore, the inhibition of single UVB-induced acute inflammation is important target for protecting skin from UVB exposure. Sairei-to (SRT), a traditional Japanese herbal medicine, has been used for inflammation treatment. Recently, it has been clinically evidenced to inhibit edema formation caused by radiotherapy. However, the effect of SRT on UVB-induced skin inflammation is poorly understood. In this study, we investigated the protective effect of SRT against the acute UVB-induced skin damage in hairless mice.
[Methods] Five-week-old male HR-1 hairless mice were treated with SRT suspension (625 or 1250 mg/kg orally) for 3 weeks (5 days/week). After 3 weeks administration, dorsal skins of the mice were exposed to UVB radiation at a dose of 250 mJ/cm^2. The change of skin erythema index (EI) and transepidermal water loss (TWEL) were measured every 24 h after UVB irradiation for 3 days. The dorsal skin tissues were collected to evaluate skin thickness, collagen fibers and infiltration of macrophage and neutrophil.
[Results] SRT significantly attenuated UVB-induced increase of EI and TWEL, and suppressed dermal thickening, collagen loss and macrophage and neutrophil infiltration, compared with UVB radiation alone group.
[Conclusion] These results indicated that SRT had preventive effect against UVB-induced skin damage and suggested that it might be a useful agent for protecting UVB-induced inflammation.