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A preliminary study on topical ozonated oil in the therapeutic management of atopic dermatitis in murine.

J. Lu, M. Chen, L. Gao, Q. Cheng, Y. Xiang, J. Huang
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Abstract

Objective: To explore whether ozonated oil recovery atopic dermatitis (AD) via immunoregulation.

Methods: Mice were repeatedly challenged with the triplex allergens of staphylococcal enterotoxin B, ovalbumin and calcipotriol ointment on the back to develop AD lesions, and were treated with ozonated oil. The lesional skins were scanned by reflectance confocal microscopy to measure the thickness of epidermis. The skin tissues were stained. Th1-type and Th2-type cytokines in serum and in tissues were detected by ELISA and real-time PCR, respectively.

Results: Ozonated oil significantly inhibited inflammation and healed the lesions in 7 d. Ozonated oil inhibited NGF expression as compared to the groups treated with vehicle or PBS ($p < .01$).The serum proteins and lesional transcripts of Th2 cytokines including IL-4 and IL-31 were lower in the ozonated oil treated group than the groups treated with vehicle or PBS ($p < .05$). The IL-10 level was increased with treatment of ozonated oil ($p < .01$). On the other hand, the expressions of Th1 cytokines including IL-2, TNF-α, and IFN-γ in the serum were not regulated by ozonated oil.

Conclusions: Our results showed that ozonated oil could suppress inflammation in an AD murine *via* decreasing Th2-dominant cytokines response and increasing IL-10 expression. These suggest that ozonated oil may be a potential remedy for AD.

Ozonated oil corrects Th1/Th2 imbalance via increasing suppressor cytokine IL-10 in atopic dermatitis(AD)-like murine model. Ozonated oil is supposed to improve the atopic skin via anti-infection, relieving itching, promoting wound healing and immune regulation. Ozonated oil is a potent new tool for the topical treatment of AD.

Disclosure statement

The authors have no conflicts of interest to disclose.

Additional information

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Objetivo: Explorar si el aceite ozonizado recupera la dermatitis atópica (EA) a través de la inmunorregulación.

METODOS: Los ratones fueron desafiados repetidamente con alérgenos triplex de enterotoxina estafilocócica B, ovoalbúmina y ungüento de calcipotriol en la espalda para desarrollar lesiones de EA, y fueron tratados con aceite ozonizado. Las pieles lesionadas se escanearon mediante microscopía confocal de reflectancia para medir el grosor de la epidermis. Los tejidos de la piel estaban teñidos. Las citocinas de tipo Th1 y Th2 en suero y tejidos se detectaron mediante ELISA y PCR en tiempo real, respectivamente.

Resultados: El aceite ozonizado inhibió significativamente la inflamación y curó las lesiones en 7 días. El aceite ozonizado inhibió la expresión de NGF en comparación con los grupos tratados con vehículo o PBS ($p < .01$). Las proteínas séricas y los transcritos lesionales de las citocinas Th2, incluidas IL-4 e IL-31, fueron menores en el grupo tratado con aceite ozonizado que en los grupos. Tratados con vehículo o PBS ($p < .05$). El nivel de IL-10 aumentó con el tratamiento con aceite ozonizado ($p < .01$). Por otro lado, las expresiones de citocinas Th1, incluidas IL-2, TNF-α e IFN-γ en el suero, no estaban reguladas por el aceite ozonizado.

Conclusiones: Nuestros resultados mostraron que el aceite ozonizado podría suprimir la inflamación en un murino con EA mediante la disminución de la respuesta de las citoquinas Th2 dominantes y el aumento de la expresión de IL-10. Estos sugieren que el aceite ozonizado puede ser un remedio potencial para la EA.