探討不同植物活性成分及其衍生化物質對於減緩修格蘭氏症候群的作用

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摘要

修格蘭氏症候群（Sjögren’s Syndrome，SS）又稱乾燥症是一種自體免疫疾病，其特徵是唾液腺和淚腺免疫介導的損傷，導致口腔和眼睛乾燥，而目前沒有有效的治療方法。植物活性成分具有抗發炎、抗氧化及免疫調節生理活性，且通常副作用少，可作為治療原發性乾燥症的替代療法。故本次報告旨在探討不同天然物質在治療乾燥症中的潛在療效與機制。第一篇研究顯示，從地黃中提取的梓醇 (Catalpol) 能改善原發性乾燥症小鼠的唾液流量，減少淋巴細胞浸潤並抑制異位生發中心的形成。其作用機制包括提升調節性濾泡 T 細胞（T follicular helper (Tfh) cells）比例並降低 IFN-γ與 B-cell activating factor (BAFF)的表達。第二篇研究指出，槲皮素 (Quercetin，QU) 顯著改善 NOD/Ltj 小鼠的唾液流量、減輕唾液腺損傷、細胞凋亡及發炎反應，並降低血清瘦素(Leptin，LP)含量，抑制唾液腺中肥胖受體(OB-R)和 JAK2/STAT3 信號的活化。第三篇研究則發現，青蒿琥酯（Artesunate，ART）可顯著減少乾燥症模式小鼠唾液腺的淋巴細胞浸潤及纖維化，提升唾液分泌功能，ART 同時降低 IFN-α 及干擾素誘導基因（Irf7、Isg15、Stat1、Mx1）的表現，顯示其能抑制 IFN-α信號過度活化。綜合以上研究，Catalpol、Quercetin 與 Artesunate 透過不同免疫調節機制減少發炎並保護唾液腺功能，展現其在 SS 治療中的潛力。

The role of different plant bioactive compounds and their derivatives in alleviating the symptoms of Shigellosis Syndrome

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Outline

1. Introduction
2. Catalpol ameliorates Sjögren's Syndrome by modulating interplay of T and B cells
3. Quercetin ameliorates salivary gland apoptosis and inflammation in primary Sjögren's syndrome through regulation of the leptin/OB-R signaling
4. Artesunate alleviates Sjögren's Syndrome by inhibiting the interferon-α signaling
5. Conclusion

Abstract

Primary Sjögren's Syndrome (SS), also known as Sicca syndrome, is an autoimmune disease characterized by immune-mediated damage to the salivary and lacrimal glands, leading to dry mouth and dry eyes, with currently no effective treatment available. Plant-derived bioactive compounds, known for their anti-inflammatory, antioxidant, and immunomodulatory properties, typically have fewer side effects and may serve as alternative therapies for SS. This report explores the potential therapeutic effects and mechanisms of various natural compounds in treating SS. The first study shows that catalpol, an extract from *Rehmanniae Radix*, improved saliva flow rate in SS model mice, reduced lymphocytic infiltration, and prevented ectopic germinal center formation. Its mechanism involved increasing the proportion of regulatory T follicular (Tfr) cells and reducing IFN-γ and BAFF expression levels. The second study indicates that quercetin alleviates salivary gland damage and inflammation in SS mice. The second study indicates that quercetin (QU) significantly enhances salivary flow, alleviates salivary gland damage, apoptosis, and inflammation in NOD/Ltj mice, lowers serum leptin (LP) levels, and inhibits activation of the salivary gland leptin receptor (OB-R) and JAK2/STAT3 signaling pathway. The third study finds that artesunate (ART) significantly reduces lymphocyte infiltration and fibrosis in the salivary glands of SS model mice, enhancing salivary secretion. ART also lowers the expression of IFN-α and interferon-stimulated genes (Irf7, Isg15, Stat1, Mx1), suggesting it can inhibit IFN-α pathway overactivation. In summary, catalpol, quercetin, and artesunate each show therapeutic potential for SS, reducing inflammation and protecting salivary gland function through different immunomodulatory mechanisms.

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