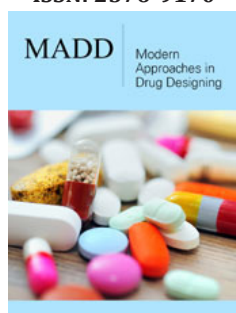


The Tibetan Medicine *Rhodiola* is Effective Against Inflammatory Storms

Wenhua Li* and Xia Gu

Medical School, China

ISSN: 2576-9170



*Corresponding author: Wenhua Li, Medical School, Xianyang, 712082, China

Submission: 📅 September 27, 2021

Published: 📅 October 14, 2021

Volume 3 - Issue 4

How to cite this article: Wenhua Li, Xia Gu. The Tibetan Medicine *Rhodiola* is Effective Against Inflammatory Storms. *Mod Appro Drug Des.* 3(4). MADD. 000568. 2021.

DOI: [10.31031/MADD.2021.03.000568](https://doi.org/10.31031/MADD.2021.03.000568)

Copyright@ Wenhua Li, This article is distributed under the terms of the Creative Commons Attribution 4.0 International License, which permits unrestricted use and redistribution provided that the original author and source are credited.

Opinion

Inflammatory storm, or cytokine storm, is an overactivation of the immune system caused by infection, drugs, or certain diseases that can rapidly lead to single or multiple organ failure, eventually threatening life. Cytokine storms have been an important cause of death in COVID-19, SARS, MERS and influenza. Cytokines mainly include interferon (IFN), interleukin (IL), chemokines, colony stimulating factors (CSFs), tumor necrosis factor (TNF) and so on. These cytokines are secreted by certain immune cells, and some of their functions are to promote inflammation, some are to inhibit inflammation, to maintain a state of equilibrium in the normal human body. When the immune system is over-activated due to infection, drugs, autoimmune diseases and other factors, it may secrete a large number of pro-inflammatory factors, leading to a positive feedback loop, which breaks through a certain threshold and becomes uncontrollable and over-amplified, finally forming cytokine storm. The accumulation of immune cells and tissue fluid in the lungs can block gas exchange between the alveoli and capillaries, leading to ARDS. Once a cytokine storm is formed, the immune system will kill a large number of normal cells in the lung while killing the virus, seriously damaging the ventilation function of the lung, which is shown as a large white lung on the LUNG CT, namely "white lung", and the patient will suffer respiratory failure until death from hypoxia. With a history of more than 3,800 years, Tibetan medicine has protected the lives and health of the Tibetan people for generations, enabling them to reproduce and live in the "third pole of the earth", where oxygen is severely depleted. *Rhodiola rosea* is a kind of clinical medicine commonly used in Tibetan medicine. It is called "Suromabao" in Tibetan and has such good names as "Plateau ginseng", "Oriental sacred grass" and "snow-capped mountain fairy grass". Studies have shown that *Rhodiola rosea* and its active ingredients salidroside have significant anti-inflammatory effects and play a role in reducing inflammatory responses in various organ inflammatory reactions, mainly through nuclear factor kappa B (NF-κB), mitogen-activated protein kinase (MAPK) and other pathways to inhibit the secretion of inflammatory mediators. Salidroside ameliorates lung injury induced by hyperventilation response in mice by inhibiting the activation of NLRP3 inflammatory bodies. It can activate Nrf2 antioxidant signaling pathway, inhibit nuclear factor κB (NF-κB) and transforming growth factor β1 (TGF-β1)/SMAD-2 /-3 pathway, and improve bleomycin-induced pulmonary fibrosis injury in rats. It has anti-inflammatory, antioxidant and anti-pulmonary fibrosis properties. Clinical studies have also found that *Rhodiola rosea* water extract has anti-inflammatory effects, can inhibit the release of cytokines and improve T cell function, improve the tolerance of patients with chronic obstructive pulmonary disease, improve moisture respiration and ventilation efficiency. In addition, *Rhodiola rosea* and its active ingredients salidroside can improve pulmonary hypertension or lung injury caused by hypoxia or lipopolysaccharide by activating adenosine receptor A2a-related mitochondrial pathways and inhibiting inflammation. More and more studies have utilized the anti-inflammatory, antioxidant and anti-apoptotic effects of *Rhodiola rosea* to treat various pulmonary diseases and improve pulmonary vascular remodeling, such as anti-inflammatory effects by inhibiting the activity of TNF-α, IL-6, IL-1β and NF-κB.

Our research group has rich Tibetan medicine research foundation. In the early stage, we induced lung injury in rats by LPS, simulated the occurrence of cytokine storm, and preliminarily explored the intervention of salidroside in cytokine storm. Made model in rats by giving different doses of rhodiola glucoside, for physiological and biochemical monitoring of the experimental rats, confirmed the effective component glycosides, *Rhodiola rosea* in certain dose range, by reducing the IL - 6, ACE2, gm-csf, such as the secretion of inflammatory cytokines, can effectively resist cytokine storm, reduce lung injury in rats, improve survival in rats. Subsequently, in order to further understand the mechanism of *Rhodiola rosea* against cytokine storm, we used the network pharmacology method to predict and analyze the main active

ingredients and possible action mechanism of *Rhodiola rosea* against cytokine storm. Bioinformatics analysis showed that kaempferol, IL-6 and STAT3 were the main targets and active components of *Rhodiola rosea* against cytokine storm.

The fact is that Tibetan medicine *Rhodiola rosea* has inhibitory effect on the process of excessive oxidative stress, interferes with cytokines that cause inflammatory storms, blocking inflammation storm through key cytokines and key signal pathways. It greatly reduces the damage of inflammatory storms to patients, and it is of great significance to improve the rapid response mechanism of Tibetan medicine to major epidemic. However, its mechanism of action needs to be improved through further research.

For possible submissions Click below:

[Submit Article](#)