The effect of *Rhodiola quadrifida* extracts on cellular immunity in mice and rats

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**Abstract**

*Rhodiola quadrifida* (Rq) roots and rhizomes are traditionally used in Asia as a tonic, adaptogen, antidepressant and anti-inflammatory drug. The aim of this work was to study the *in vivo* effect of aqueous and 50% hydro-alcoholic extracts of Rq rhizomes on some parameters of cellular immunity in mice and rats.

The metabolic activity of blood phagocytizing cells was determined based on the measurement of intracellular respiratory burst after stimulation by PMA in RBA test. Potential bactericidal activity of phagocytizing cells was determined in isolated blood leukocytes stimulated with killed microorganisms, according to the PKA test. Proliferative response of lymphocytes stimulated by mitogen concanavaline A (ConA) or lipopolysaccharide (LPS) were determined by MTT assay. Both extracts stimulated granulocytes activity *in vitro* and increased lymphocyte response to mitogens. The ability of parental strain mice lymphocytes to induce local cutaneous graft-versus-host reaction (GVH) in F1 hybrids was stimulated by 50% hydro-alcoholic extract only.

**Key words:** *Rhodiola quadrifida*, mice, rats, cellular immunity

**Introduction**

Species *Rhodiola quadrifida* (Pall.) belongs to *Crassulaceae* family. This species grows in Asia – in China, Tibet and Mongolia (Gobi Desserts). *Rhodiola quadrifida* (Rq) known in China as Si Lie Hong Jing Tian; and in Mongolia as Altan Gagnuur is used in traditional medicine in Mongolia and Tibet also. Similarly as *Rhodiola rosea*, Rq is used in infections, heart diseases and pains. Prescriptions based on underground parts of that plant are used as liniment for burns and contusions. Rq has anti-inflammatory, bacterio- and fungo- static properties. Traditionally, Rq was used also as a tonic, adaptogen, and antidepressant (Bykov et al. 1999, Monograph 2002, Boldsaikhan 2004, Wiedenfeld et al. 2007). Information about immunotropic activity of *Rhodiola* is very scarce. We previously reported

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