The effect of chinese medicinal herb
*Rhodiola kirilowii* extracts on cellular immunity in mice and rats

R. Wójcik¹, A.K. Siwicki¹, E. Skopińska-Różewska², A. Wasiutyński²,
E. Sommer², M. Furmanowa³

¹ Department of Microbiology and Clinical Immunology,
University of Warmia and Mazury, Oczapowskiego 13, 10-957 Olsztyn, Poland
² Department of Pathology, Biostructure Center,
Medical University, Chalubińskiego 5, 02-004 Warsaw, Poland
³ Department of Biology and Pharmaceutical Botany, Medical University, Banacha 1, 02-097 Warsaw, Poland

Abstract

*Rhodiola kirilowii* (RK) roots and rhizomes are traditionally used in China as a tonic, adaptogen, antimicrobial and anti-inflammatory drug. The aim of this work was to study the *in vivo* and *in vitro* effects of aqueous and 50% hydro-alcoholic extracts of RK rhizomes on some parameters of cellular immunity in H-2d mice and rats. We show for the first time that *in vitro* both extracts stimulated granulocyte activity and increased lymphocyte response to mitogens, and *in vivo* they enhanced the ability of lymphocytes derived from parental strain mice fed *R. kirilowii* aqueous and hydro-alcoholic extracts, to induce local cutaneous graft-versus-host reaction (GVH) in F1 hybrids.

Conclusion: *Rhodiola kirilowii* extracts are cellular immunity enhancers.

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

Introduction

Species *Rhodiola Kirilowii* (Regel) belongs to the *Crassulaceae* family. This medicinal plant is indigenous to the high altitude Qinghai – Tibet Plateau in China. The plant is used in traditional Chinese medicine for the enhancement of the ability of anti-anoxia; it also shows anticoagulative properties and decreases the level of blood sugar. *Rhodiola Kirilowii* (RK) is also described as a herbal medicine protecting people against cardiopulmonary function problems when moving to high altitude (4500 m). It has been used by astronauts, pilots and mountaineers. Recently, Chinese authors reported its *in vitro* activity against chronic hepatitis C virus (HCV) and against *Mycobacterium tuberculosis* (Zhang 1989, Wiedenfeld et al. 2007, Zuo et al. 2007, Wong et al. 2008). Similarly to *Rhodiola rosea*, RK is also used for infections and pain. RK has anti-inflammatory, bacterio- and fungostatic properties (Kędzia et al. 2006).

The main chemical substances present in RK roots and rhizoma extracts are salidroside, tyrosol, daucosterol, lotaustralin, sucrose, beta-sitosterol, arbutin, rhodiocyanoside A, epigallogatechin gallate and fructopyranos-(1-4)-glucopyranose. (Wiedenfeld et al. 2007).