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Effects of Rhodiola rosea L. extract on behavioural and physiological alterations induced by chronic mild stress in female rats.

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Abstract

Rhodiola rosea L. is one of the most popular adaptogen and an antistress plant in European and Asiatic traditional medicine. Our previous studies have confirmed the adaptogenic and antistress properties of a single administration of R. rosea L. extract in rats exposed to acute stress. There is increasing evidence that prolonged exposure to stressful life events and depression are both related to significant behavioural, endocrinological and neurobiological changes in human and animal subjects. The aim of this study was to determine whether chronic treatment with a hydroalcoholic R. rosea extract (RHO) standardized in 3% rosavin and 1% salidroside can prevent alterations induced in female rats following 6 weeks of a chronic mild stress (CMS) procedure. This was analysed through the behavioural and physiological parameters of consumption of 1% sucrose solution, locomotor and exploratory activities, body weight gain and oestrous cycle length. After the first 3 weeks of stress, RHO was administered daily by gavage at doses of 10, 15 and 20 mg/kg for the remaining 3 weeks. In addition, the antidepressant drug fluoxetine (10 mg/kg os), which has been shown to reverse CMS-induced disruptions, was used as the reference treatment. Rats subjected to the CMS procedure demonstrated decreased sucrose intake, reduced moving behaviour, minimized weight gain and dysregulation of their oestrous cycle. Treatment with RHO completely reverted all of these changes. The effects of RHO were comparable to those of fluoxetine. Interestingly, neither RHO nor fluoxetine influence the behavioural and physiological parameters tested in non-stressed animals. These findings strongly showed that chronic administration of RHO results in potent inhibition of the behavioural and physiological changes induced by chronic exposure to mild stressors.

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