The Effects of Rhodiola Rosea On Submaximal Exercise

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Abstract

Introduction: Rhodiola Rosea is a traditional medical herb that grows in mountainous regions. It has been used to enhance mental and physical performance and treat psychological stress and fatigue. Some research studies have shown that Rhodiola Rosea has anti-inflammatory properties and t it has also been shown to improve aerobic endurance.

Purpose: The purpose of this study was to evaluate the effects of an acute intake of Rhodiola Rosea on submaximal exercise.

Methods: Eight male participants (age 22.9 + 2.99 yrs, weight 174.4 + 27.72 lb, height 69.8 + 3.72 in, and BMI 21.93 + 8.4 kg/m2) of the UTA Kinesiology department, volunteered to participate in this study. Each subject met for two sessions consisting of a 30 minute submaximal exercise test on the cycle ergometer with the workload set to elicit 70% of their age-predicted maximal heart rate. The subjects took either a single dose of Rhodiola Rosea or Placebo the day before and another dose an hour before testing. During each test, heart rate (HR), rate of perceived exertion (RPE), and blood lactate (BLa) were recorded along with the maximal values measured by the metabolic cart, relative maximal oxygen consumption (VO2), every 10 minutes, and total distance was recorded at the end of test.

Results: The results for the placebo at 10, 20, and 30 minutes were: HR (137±2.49; 137±5.58; 137±3.12 bpm), BLa (8.25±3.78; 9.21±4.71; 6.15±2.95 mmol/L), RPE (11±1.60; 12±1.20; 13±1.91), VO2 (23.24±2.99; 21.78±2.87; 21.20±3.57 ml/kg/min), and the average distance was 14.55±2.12 km. The results for Rhodiola Rosea were: HR (141±10.23; 142±5.42; 142±2.92 bpm); BLa (2.94±3.30; 9.09±4.98; 6.45±2.89 mmol/L); RPE (11±1.75, 12±1.30, 13 ±1.96); VO2 (22.75±2.89; 20.10±4.03; 20.50±1.52); and the average distance was 14.18±0.81 km. There was a statistically significant difference in HR at 30 minutes and RPE at 20 minutes ($p < 0.05$). However, there was no statistical significant difference for any of the other variables tested ($p > 0.05$).

Conclusion: The results of this study did not substantiate the claims of Rhodiola Rosea that it would improve aerobic endurance as there was not a significant difference in the VO2 or the distance traveled. A prolonged dosage time may be needed in order to see a greater effect on submaximal exercise.

Purpose

The purpose of this study was to evaluate the effects of an acute intake of Rhodiola Rosea on Submaximal Exercise.

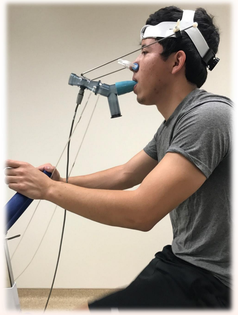
Methods

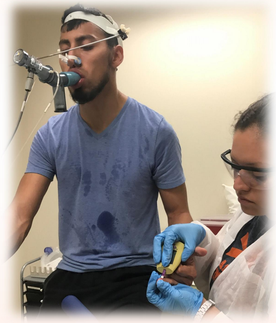
- **Eight active male individuals volunteered to participate in the study.**
- **The subjects were required to come to the lab for two sessions during the study. On the first day, the subjects had their height, weight measured and BMI calculated as shown in Table 1.**
- **They were given two doses of either the supplement Rhodiola Rosea or the alternative (Splenda filled capsule), each session. One dose was taken 24 hours before the test and the second dose was taken 1 hour prior to exercising.**
- **Each session was conducted on a Sensormedics cycle ergometer connected to a metabolic cart for 30 minutes at 70% of the subject's age-predicted maximal heart rate.**
- **During each session, heart rate (HR), rate of perceived exertion (RPE), and blood lactate (BLa) were recorded along with the maximal values measured by the metabolic cart, relative maximal oxygen consumption (VO_2) every 10 minutes, and total distance was recorded at the end of test.**
- **The second session followed the same protocol.**

Methods (cont'd)

Table 1: Demographics

	Mean	SD	Max	Min
Age (yrs)	22.9	2.99	26	19
Height (m)	2.75	0.15	2.95	2.52
Weight (kg)	79.10	12.58	95.25	65.77
Body Mass Index (kg/m^2)	10.54	1.00	11.81	8.90





Results

Table 2: Heart Rate

	10 minutes	20 minutes	30 minutes
Rhodiola Rosea	141±10.23 bpm	142±5.42 bpm	142±2.92 bpm
Placebo	137±2.49 bpm	137±5.58 bpm	137±3.12 bpm

Table 3: RPE

	10 minutes	20 minutes	30 minutes
Rhodiola Rosea	11±1.75	12±1.30	13 ±1.96
Placebo	11±1.60	12±1.20	13±1.91

Results (cont'd)

Table 4: Blood Lactate

	10 minutes	20 minutes	30 minutes
Rhodiola Rosea	2.94±3.30 mmol/L	9.09±4.98 mmol/L	6.45±2.89 mmol/L
Placebo	8.25±3.78 mmol/L	9.21±4.71 mmol/L	6.15±2.95 mmol/L

Table 5: VO_2

	10 minutes	20 minutes	30 minutes
Rhodiola Rosea	22.75±2.89 ml/kg/min	20.10±4.03 ml/kg/min	20.50±1.52 ml/kg/min
Placebo	23.24±2.99 ml/kg/min	21.78±2.87 ml/kg/min	21.20±3.57 ml/kg/min

Table 6: Distance

Rhodiola Rosea	14.18±0.81 km
Placebo	14.55±2.12 km

- **In Table 2, there was a statistically significant difference in HR at 30 minutes ($p = 0.020$).**
- **In Table 3, there was a statistically significant difference in RPE at 20 minutes ($p = 0.041$).**
- **In Tables 4, 5, and 6, there was no significant difference in BLa, VO_2, and distance ($p > 0.05$).**

Conclusions

- **The results of this study did not substantiate the claims of Rhodiola Rosea that it would improve aerobic endurance as there was not a significant difference in BLa, VO_2 or the distance traveled.**
- **A prolonged dosage time may be needed in order to see a greater effect on submaximal exercise.**