The effect of **Ramisol**™ on biathlete training

Abstract

Scientific literature recognizes that psychological stress has significant impact on the performance of athletes. Over-training syndrome and some sports injuries are common manifestations of psychological stress in training. The stress hormone cortisol is released in response to high intensity exercise. Stress and high levels of cortisol are related to fatigue, changes in mood and depression in athletes.

Ramisol™ is a casein hydrolysate with scientifically proven anti-stress properties which were tested in a study on ten national and international caliber biathletes from a Military Base in Quebec. The athletes were subjected to 4 weeks of rigorous training and various blood tests were conducted to measure cortisol levels. Training intensity was increased by 10 % each week. The mean cortisol level in athletes taking **Ramisol**™ was significantly lower at week 4 compared to the basal level observed during the first week, while it was higher in athletes taking placebo. This study shows that **Ramisol**™ prevents the increase in cortisol level induced by rigorous training.

Introduction

The relationship between stress and performance in competition - as well as in every day life - has been extensively investigated and there is general agreement that individuals perform best at some "optimal" level of stress. However, it is important to maintain the balance between training and recovery in order to achieve optimal performance. Recovery helps restore psychological and physical resources as well as the homeostatic balance of the body. The "super compensating" phase allows athletes a physiological adaptation that leads to a long-term performance enhancement. If athletes suffer from inadequate recovery, psychological and physical consequences such as over-training and burnout may occur (Kellmann and Günther, 2000).

It is well known that athletes are exposed to high levels of psychological and physical stress. Psychosocial stressors (life events and everyday problems), emotional stress (competitive pressure, success and failure, perceived ability to cope), excessive training (intensity, duration) and poor rest exacerbate the stress response to exercise. This affects performance and increases the frequency of injuries and infections (Clow and Hucklebridge, 2001; Janelle, 2002).

High cortisol levels[1] have been associated with mood disturbances, anxiety and depression (Vedhara, et al., 2003). Exercise elevates cortisol levels in plasma according to the intensity and to the duration of the exercise (Rudolph and McAuley, 1998). It has been shown that cortisol levels are higher in over-trained or under-performing athletes and a correlation has also been established between those athletes and depressed mood state.

Elevated anxiety during exercise will elicit a higher concentration of cortisol than the same workload without emotional stress. When excessively elevated, cortisol levels have a negative effect on performance and contribute to muscle catabolism (Steinacker et al., 2003). Rest is necessary to limit the increase and accumulation of cortisol in the blood and counter the negative effects.

Trainers and athletes are continually searching for ways to a faster and better recovery. A product that would reduce the deleterious effects of stress and limit the high levels of cortisol accumulation would be able to enhance recovery and therefore performance.

Ramisol™**,** a casein hydrolysate with anxiolytic properties, has been shown to induce a significant reduction of cortisol levels in healthy

[1] Cortisol level is a biological stress indicator.

humans exposed to physical and psychological stress conditions, whereas a non significant increase in cortisol levels was observed in the subjects that were given a placebo (Lefranc, 2001). Inspired by those results, another study was conducted to verify the effect of **Ramisol**™ on cortisol levels in athletes subjected to a rigorous training protocol. Ten biathletes of national and international caliber from the Valcartier Military Base in Quebec (CANADA) were subjected to 4 weeks of rigorous training and various blood tests were conducted in order to measure cortisol levels. The biathlon is extremely stressful and demanding physiologically. Nelson Ayotte, chief biathlon trainer for the Canadian Forces, has observed a considerable rise in the blood cortisol levels of athletes, a response to training and competition that affects their performance. He is convinced that the reduction of the cortisol levels is a key to more efficient recovery and better performance.

Method

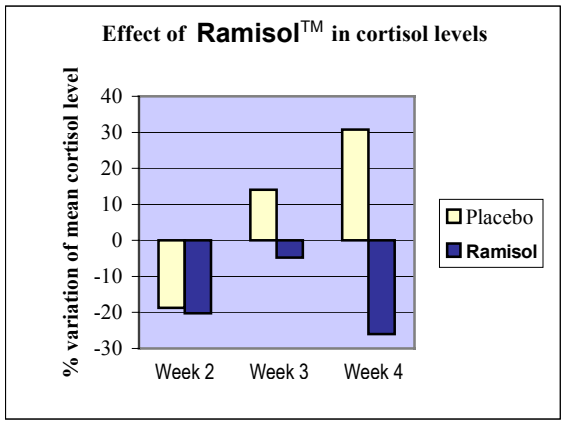
The 10 biathletes participating in the study were separated into two groups: the first one was given **Ramisol**™ (150 mg) once a day and the second one was given a placebo. The athletes had to take the product immediately after the main training session of the day, which was in the morning at 11:30 a.m. The study was double-blind. **Ramisol**™ and the placebo were identified as product "A" or product "B" and were given to the examiner who distributed the products to the athletes. All participants also took glutamine (2 X 10g) daily.

All athletes were subjected to the same training protocol for a period of 4 weeks. The training load was increased by 10% each week. In the first week of training, athletes did not receive either product and basal individual levels of cortisol were determined. During the remaining three weeks, athletes received one 150mg capsule of **Ramisol**™ or a placebo and cortisol levels were also determined. Four blood samples were taken, one after the last training day of each week. All blood handling was carried out by Sgt Kirouac and his team at the Valcartier Military Base.

Results

At weeks 3 and 4, the mean cortisol level of athletes taking the placebo increased from basal level (+14 and +31 % respectively) in response to training intensity which was increased by 10% each week.

Graph 1: Mean cortisol level variation



In the group that was given **Ramisol**™**,** the product induced a reduction of the mean cortisol levels at weeks 2, 3 and 4 compared to the mean basal value (-20, -5 and -26 % respectively). The group that was given **Ramisol**™ presented a higher basal mean cortisol level, but at week 4, their mean cortisol level was lower than the mean cortisol level of the placebo group. The reduction in cortisol levels in the group that was given **Ramisol**™was very significant considering that the last week's workload was very strenuous.

Table 1: Individual cortisol levels during the training protocol

	Basal cortisol W1 (nmol/L)	Cortisol W2 (nmol/L)	Cortisol W3 (nmol/L)	Cortisol W4 (nmol/L)
Ramisol™				
Subject 1	302	250	235	285
Subject 2	293	267	253	360
Subject 3	521	433	289	293
Subject 4	237	157	139	236
Subject 5(F)	1234	957	1547	741
Mean	517.4	412.8	492.6	383
Difference to basal		- 104.6	- 24.8	- 134.4
Placebo				
Subject 1	295	135	323	553
Subject 2	337	261	428	519
Subject 3	397	302	531	319
Subject 4	250	234	261	290
Subject 5(F)	475	493	457	612
Mean	350.8	285	400	458.6
Difference to basal		- 65.8	+ 49.2	+ 107.8

Conclusion

This study shows that **Ramisol**™ prevents the increase in cortisol level induced by rigorous training load. The mean cortisol level in athletes taking **Ramisol**™ was significantly lower at week 4 compared to the basal level encountered during the first week, whereas it was higher in athletes taking the placebo. Cortisol levels in athletes taking **Ramisol**™ were better controlled than those that were given the placebo.

Several studies have shown that hyper cortisolism is a marker of over-training and performance incompetence syndrome and high cortisol levels have been related to states of anorexia, muscle catabolism, myopathy-like state and altered immune function (Lakier Smith, 2003; Nandi et al., 2002; Steinacker et al., 2003). Results from this study, strongly suggest that **Ramisol**™ could help counter the negative physiological effects caused by excessive cortisol levels reported in elite athletes. **Ramisol**™ may therefore enhance recovery benefits in order to ensure better performance development.

The management of stress in sports, either physical or psychological, is determinant to reduce the risks of over-training, depression and injury.Therefore **Ramisol**™ can be considered as an ergogenic supplement of choice for athletes.

References

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