

Meeting abstract

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## Influence of an Ironman triathlon on sister chromatid exchanges and high frequency cells

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from 13th Scientific Symposium of the Austrian Pharmacological Society (APHAR). Joint Meeting with the Austrian Society of Toxicology (ASTOX) and the Hungarian Society for Experimental and Clinical Pharmacology (MFT) Vienna, Austria. 22–24 November 2007

Published: 14 November 2007

BMC Pharmacology 2007, 7(Suppl 2):A61 doi:10.1186/1471-2210-7-S2-A61

This abstract is available from: <http://www.biomedcentral.com/1471-2210/7/S2/A61>

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### Introduction

Regular moderate exercise and its beneficial influence on health have already been well-investigated. However, information on high volume exercise which might lead to increased oxidative stress and DNA damage is still very limited. The purpose of the present study was to investigate the effect of an Ironman triathlon race (3.8 km swim, 180 km cycle, 42 km run) on genomic stability and a possible DNA damage.

### Materials and methods

The sister chromatid exchange (SCE) assay is a cytogenic biomarker, which can be influenced by various factors such as oxidative stress that occurs during extreme endurance exercise. Within this study SCEs and high frequency cells (HFCs) were measured in peripheral blood lymphocytes of nine well trained male triathletes (age  $38 \pm 6$  years;  $VO_2$  peak  $55.59 \pm 2.97$  ml/kg/min; height  $179.1 \pm 4.19$  cm; weight  $76.3 \pm 4.27$  kg). Blood samples were collected 48 h before and 24 h post race.

### Results

The mean SCE frequency in the Ironman triathletes 2 days before the race was  $6.55 \pm 2.71$  per metaphase, which was significantly higher than post race ( $5.69 \pm 2.60$  SCEs per metaphase,  $p < 0.05$ ). Additionally the mean of HFCs significantly decreased from  $11.06 \pm 2.66$  per metaphase

before the race to  $9.42 \pm 3.74$  per metaphase post race ( $p < 0.05$ ).

### Conclusion

The significant decrease of SCEs and HFCs after the Ironman triathlon race provides an indication of endogenous repair mechanisms or counterregulations, which seem to prevent DNA damages probably through releasing antioxidants.