



## SWIMMING EXERCISE PRECONDITIONING ATTENUATES THE RESPONSE TO NSAD- GASTROINTESTINAL DAMAGE TRIGGER IN MICE

Guilherme Silva dos Santos Candeia<sup>1</sup>, Rafael Luiz Pichetti<sup>1</sup>, Gabrielle D. Grande<sup>1</sup>, Lincon B. Somensi<sup>2</sup>, Larissa Venzon<sup>1</sup>, Tauani C. S. França<sup>1</sup>, Ana C. Santos<sup>1</sup>, and Luisa Mota da Silva<sup>1\*</sup>

<sup>1</sup>Universidade do Vale do Itajaí, Brasil. <sup>2</sup>Universidade Alto Vale do Rio do Peixe, Brasil.  
\*luisa@univali.br

### **INTRODUCTION**

The practice of exhausting physical activity is capable of developing injuries in different organs and tissues, which often leads to abusive use of non-steroidal anti-inflammatory drugs (NSAIDs) to reduce inflammation and pain. In turn, NSAIDs' prolonged use increases gastric and duodenal ulcers.

### **MATERIAL AND METHODS**

Swiss mice were submitted to a swimming protocol, as physical exercise, for 5, 15, and 30 minutes, five days a week for 4 weeks. The control group, sedentary, didn't receive training. After this period, half of the animals in each group were submitted to the indomethacin-induced enteropathy (100 mg/kg, p.o). After the 8-hour period, they were euthanized, and their stomachs and intestines were removed and submitted to the measurement for evaluation on biochemical parameters with measurement of relevant data for the study. Biochemical parameters were evaluated on the animal's intestinal mucosa after the euthanasia. CEUA: 065/17E

### **RESULTS**

In the animals that received indomethacin administration, groups that swam for 15 or 30 minutes presented a reduction in gastric injury, but no macroscopic injuries were detected in the duodenal mucosa of either group. The gastroprotective effects of swimming for 15 or 30 minutes was accompanied by an increase in mucin content. The results demonstrate that

swimming for 5, 15, or 30 minutes reduces the levels of lipoperoxides (LOOH) on the gastric and duodenal mucosa of mice exposed, while the reduced glutathione level was increased in mice that swam 5 minutes and were exposed. In addition, increased LOOH and GSH levels, and CAT activity was detected in the gastric mucosa of mice unexposed to the NSAID that swam 30 minutes. The GST activity did not change in mice non-exposed to indomethacin but reduced in the gastric ulcerated mucosa and increased in the duodenal mucosa of the sedentary group treated with indomethacin. The GST activity was normalized in the ulcerated gastric mucosa of mice that swam 30 minutes, and in the duodenal mucosa of mice treated with indomethacin that swam 5 minutes. In addition, CAT activity was decreased in the gastric and duodenal mucosa of sedentary mice treated with indomethacin but was normalized in mice that swam. The MPO activity was increased in the gastric and duodenal mucosa of sedentary mice treated with indomethacin and reduced in the gastric mucosa of ulcerated animals that swam 15 and 30 minutes, as well as in the duodenal mucosa of mice exercised by 5, 15 and 30 min.

### **CONCLUSIONS**

Therefore, these results indicate a dual effect of the aerobic physical exercise in the gastrointestinal mucosa.

