Intensive anaerobic exercise training and leucocyte cells changes in aloxan diabetic rats

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Introduction
Diabetes remains a serious disease with life-threatening complications. It is by far the most common metabolic disease and affects 5% of the population in industrialized countries. Type I diabetes mellitus arises as a consequence of immunologically mediated pancreatic islet beta-cell destruction in genetically susceptible individuals. A variety of immune interventions has been used, some immunosuppressive and some immunomodulatory. Several screening programs are used in order to identify high-risk subjects who may benefit from an early intervention. Greater physical activity has been associated inversely with the prevalence of diabetes in several cross-sectional studies. Physical activity increases the sensitivity to insulin, and regular endurance exercise can induce and maintain weight loss, improve glucose tolerance and ameliorate most of the abnormalities in the metabolic syndrome. But further studies are needed to demonstrate the relationship between physical activity and immune system in diabetes. The purpose of this study was to determine the affects of repeated bouts of intensive exercise on circulating leukocyte number in experimental alloxan diabetes-induced in rats.

Methods
Male young Wistar rats were distributed into four groups: sedentary diabetic(SD), training diabetic(TD), training control(TC) and sedentary control(SC). Diabetes was induced by alloxan(42mg/kg body weight) During five weeks the animals of TC and TD groups followed a physical training anaerobic protocol progressive which consisted of sets of 2 minute (interruped by one minute of rest interval, during 50 minute) in a swimming pool and overload equivalent to 30% -50% of the body weight. At the end of the experimental period, blood samples were collected for total and differential leucocyte.

Results
We results showed that not has differences statically significant between the experimental groups (SD, TD, TC and SC respectively) in circulating eosinophils *(205 ± 197, 152 ± 52, 129 ± 36 and 209 ± 87) or neutrophils *(7521 ± 3153, 3444 ± 2522, 3351 ± 973 and 2100 ± 591) or and mononuclear cells *(2725 ± 2301, 5360 ± 2.126, 8185 ± 1.337 and 5008 ± 1.154). We can observed that physical exercise induced increase, but not statically significant in mononuclear cells number in alloxan diabetes-induced rats.

* (Absolute Number of Cells)

<table>
<thead>
<tr>
<th>Parameters</th>
<th>Eosinophils</th>
<th>Neutrophils</th>
<th>mononuclear cells</th>
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<tbody>
<tr>
<td>SD</td>
<td>205 ± 197</td>
<td>7521 ± 3153</td>
<td>2725 ± 2301</td>
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<tr>
<td>TD</td>
<td>152 ± 52</td>
<td>3444 ± 2522</td>
<td>5360 ± 2126</td>
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<tr>
<td>TC</td>
<td>129 ± 36</td>
<td>3351 ± 973</td>
<td>8185 ± 1337</td>
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<tr>
<td>SC</td>
<td>209 ± 87</td>
<td>2100 ± 591</td>
<td>5008 ± 1154</td>
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Table 1: Comparative differential leucocyte Cells between the groups. No differences statically significant

Discussion/Conclusion
The data suggest that, the intensive exercise not stimulate as well as not show suppressive effects above the immune system in alloxan diabetes-induced rats and can be used to benefit from an early intervention.

The Authors Thanks To: FUNADESP

References