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| Tipo | Periódico |
| Título | Glycerophospholipids in red blood cells are associated with the aerobic performance in young swimmers |
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| Programa/Curso (s) | Programa de Pós-Graduação Stricto Sensu em Ciências da Saúde |
| DOI | 10.3390/nu16060765 |
| Assunto (palavras chaves) | Lipidômica, Natação, Glóbulos vermelhos, Velocidade crítica, Desempenho aeróbio |
| Idioma | Inglês |
| Fonte | Título do periódico: Nutrients ISSN: 2072-6643 Volume/Número/Paginação/Ano: 16(6), 765 |
| Data da publicação | 03/2024 |
| Formato da produção | Digital |
| Resumo | <p>This study aimed to characterize the composition of lipids in the red blood cells (RBCs) of adolescent swimmers and correlate this lipidome with the aerobic performance of the athletes. Five experimental assessments were performed by 37 adolescent swimmers. During the first session, the athletes went to the laboratory facility for venous blood sampling. The critical velocity protocol was conducted over the 4 subsequent days to measure aerobic performance (CV), comprising maximal efforts over distances of 100, 200, 400, and 800 m in a swimming pool. RBCs were obtained and extracted for analysis using the liquid chromatography—high resolution mass spectrometry untargeted approach. A total of 2146 ions were detected in the RBCs, of which 119 were identified. The enrichment pathway analysis indicated intermediary lipids in the glycerophospholipid, glycerolipid, sphingolipid, linoleic acid, and alpha-linolenic metabolisms, as well as pentose and glucuronate interconversions. A significant impact of the intermediary lipids was observed for the glycerophospholipid metabolism, including phosphatidylethanolamine (PE), phosphatidylcholine (PC), 1-acyl-sn-glycero-3-phosphocholine, sn-glycerol 3-phosphate, and phosphatidic acid. Inverse and significant associations were observed for PE 18:2/18:3 ($r = -0.39$; $p = 0.015$), PC 18:3/20:0 ($r = -0.33$; $p = 0.041$), and phosphatidic acid 18:0/0:0 ($r = -0.47$; $p = 0.003$) with aerobic performance. Swimmers who exhibited higher levels of aerobic performance also had the lowest abundance of PE, PC, and phosphatidic acid.</p> |
| Fomento | CNPq (408680/2021-0) |