ERYTHROCYTE PHOSPHOLIPID FATTY ACID COMPOSITION IN PROFESSIONAL BASKETBALL AND FOOTBALL PLAYERS

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Dietary fatty acid profile has an important role for the incorporation of fatty acids (FA) into the cell membranes. Exercise may alter the rate of exchange of phospholipids between plasma and erythrocyte membranes. However, the effect of physical activity on membrane phospholipid fatty acid composition has not been studied thoroughly.

The aim of this study was to analyse phospholipid FA profile in erythrocytes of the professional basketball and football players.
The erythrocyte phospholipid FA profile was determined in 20 basketball (B), 26 football (F) players and 16 untrained male subjects who were included in the study as a control group. All subjects were lean (BMI< 25), normolipemic and not on any specific diet.
The erythrocyte phospholipid fraction was isolated by thin layer chromatography and fatty acid methyl esters were analysed using gas chromatography. Statistical analysis was performed using unpaired Students t-test, accepting an alpha level of significance (p<0.05).
The percentage of saturated fatty acids and stearic acid (18:0) is significantly higher (p<0.01 and p<0.05 respectively) in group B compared to group C and group F.
The percentage of linoleic acid (18:2 n-6) is significantly lower (p<0.001 and p<0.01 respectively) in group B compared to group C and group F.
The percentage of dihomo-gamma-linolenic acid (20:3 n-6) is significantly higher (p<0.05) in group B compared to group C.
The ratio of 20:3 n-6/18:2 n-6 that shows the activity of delta-6-desaturase and elongase is significantly higher (p<0.001 and p<0.01 respectively) in basketball players compared to control group and football players.
However, the ratio of 18:1/18:0, as a measure of activity of delta-9-desaturase, is significantly higher (p<0.01) in football players compared to basketball players.
The changes of erythrocyte phospholipid fatty acid profile may be associated with the type of exercise and with increased endogenous synthesis of stearic acid in basketball players.
Considering that both groups of professional players had similar dietary intake, our study indicated that changes in fatty acid metabolism and activity of desaturase and elongase could also be influenced by the type of professional sport.

Keywords: Biochemistry, Sport, Red Blood Cell

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