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インスリン抵抗性を有するスポーツ選手における高炭水化物食摂取後の血液性状変化

(Changes of blood characteristics in athletes with insulin resistance following a high-carbohydrate meal)

長谷川　智美（はせがわ　ともみ）

博士（スポーツ健康科学）

Abstract

The study examined changes of the blood characteristics in athletes with insulin resistance following a high-carbohydrate meal. Ten male athletes who belonged to the throwing block of a college track and field club participated. HOMA-R values were calculated from fasting plasma insulin and glucose values. Changes in blood glucose and insulin were followed for up to 2 hours after a 75-g oral glucose tolerance test (OGTT).

The subjects were divided into a high-HOMA-R group with insulin resistance (n=3) and a low-HOMA-R group (n=7). OGTT results were within the normal range in both groups and did not differ between the two groups. By contrast, the blood glucose level following a high-carbohydrate meal was significantly ($p < 0.05$) higher in the high-HOMA-R compared with the low-HOMA-R group. The blood insulin concentration was significantly higher in the high-HOMA-R group both while fasting and after the high-carbohydrate meal ($p < 0.05$ and $p < 0.001$, respectively), as were the triglyceride levels ($p < 0.05$ and $p < 0.001$, respectively). There was no significant difference in energy expenditure between the two groups either during fasting or after the meal intake. The respiratory quotient was significantly ($p < 0.05$) higher in the high-HOMA-R group while fasting.

The results of this study suggest that athletes with insulin resistance have a lower fat metabolism, as they became hyperinsulinemic and had high triglyceride levels following a high-carbohydrate meal. Although high-carbohydrate meals may improve performance in athletes, they may also harm their health.