EFFECT OF RED FRUIT OIL ON MALONDIALDEHYDE LEVEL AT MAXIMUM PHYSICAL ACTIVITY

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ABSTRACT

BACKGROUND: Maximum physical activity can produce an imbalance between reactive oxygen species and antioxidants, which may lead to tissue injury and fatigue. Malondialdehyde (MDA) is an organic compound with the formula CH2(CHO)2, and a byproduct of lipid metabolism in the body. It is a reactive electrophile species that causes toxic stress in cells and forms covalent protein adducts, called advanced lipoxidation end products (ALE). This reactive species occurs naturally and is a marker for oxidative stress. Red fruit oil (Pandanus conoideus Lam) contains high betacarotene and tocopherol. This study aimed to investigate the effect of red fruit oil on malondialdehyde level in maximal physical activity.

SUBJECT AND METHODS: This was a randomized-controlled trial, with pretest-posttest control group design. Thirty athletes were selected for this study and allocated into two groups. During the training program, the subjects in the experimental group consumed 5 ml of the red fruit oil every day. After the training program, all athletes performed maximum physical activity, which was measured by taking a Bleep test. Blood sample was collected before and after the test to measure the level of MDA.

RESULTS: Plasma MDA levels (mean ± SD in nmol/ml) before intervention were comparable and statistically non-significant (p>0.05) between the experimental group (1.57 ± 0.12) and the control group (1.52 ± 0.06). Plasma MDA level (mean ± SD in nmol/ml) after intervention was lower and statistically significant (p=0.001) in the experimental group (1.11 ± 0.02) than the control group (1.64 ± 0.11). In addition, the VO2Max after intervention was higher and statistically significant (p=0.001) in the experimental group than the control group. Red fruit oil also delayed fatigue in the experimental group longer than the control group.

CONCLUSION: Red fruit oil reduces MDA level, increases endurance, and delays fatigue during maximal physical activity in athletes.

Keywords: red fruit oil, antioxidant, malondialdehyde, maximal physical activity