**1B-06 The effect of triglycerides on glucose and lipid metabolism at rest**

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**Purpose:** Medium-chain triglycerides (MCT), containing 8-10 carbon fatty acids differ from long-chain triglycerides (LCT), containing ≥12 carbon fatty acids. MCT are absorbed directly into the portal circulation and transported to the liver for rapid oxidation. Therefore, we compared the effect of MCT/LCT on glucose metabolism at rest and during exercise. **Methods:** Male ICR mice (4 wk of age) were used. Mice were randomly divided into LCT, MCT, glucose, and placebo groups. Mice were ingested one of the following liquids after an overnight fast: MCT or LCT or glucose (25% glucose, 0.25% emulsifier, 0.75% casein sodium, and 2.5% MCT or LCT or glucose) or placebo (water only). Blood and tissues were taken 15 min after exercise (20m/min) with 30 min of rest after the ingestion. Some mice were sacrificed immediately before exercise. Concentrations of blood glucose, lactate, free fatty acids, triglycerides and 3-hydroxybutyrate (3-HBA) were measured. **Results and Discussion:** In LCT, MCT and glucose groups, the concentrations of blood glucose were significantly higher than those in placebo group. In LCT and glucose groups, blood triglycerides were increased during exercise (p<0.05), whereas in MCT group they decreased (p<0.05). Similarly, in LCT and glucose groups, 3-HBA concentrations were increased during exercise, while in MCT group the increase was repressed. These results suggest that MCT ingestion might have some effects on metabolism of glucose during exercise whereas LCT seemed to have no effect. It is hypothesized that MCT ingestion with glucose can save glucose for energy.

**Key Words:** MCT, LCT, glucose, free fatty acids

**1B-07 Effect of lactate ingestion on glycogen and lactate metabolism during exercise**

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**Purpose:** Lactate has been shown to be a substrate for oxidative metabolism in heart and skeletal muscle. Therefore in this study, we investigated effect of lactate ingestion before endurance exercise on glycogen and lactate metabolism during exercise. In addition, we examined whether MCT1, MCT4 (Monocarboxylate Transporter) or GLUT4 (Glucose Transporter) and blood lactate concentration are related.

**Methods:** Five-week-old male ICR mice were used. Mice were assigned randomly to a control (Con), lactate ingested (La) and glucose ingested (Glc) group. After overnight fast, mice were ingested lactate or glucose (2.5mg/g body weight) before 30 min of exercise. All mice did endurance exercise (20m/min for 0,15,30 or 60min). Blood and tissues were taken immediately after the exercise. MCT1, MCT4 and GLUT4 protein were measured by Western Blotting methods.

**Results & Discussion:** Lactate ingested mice maintained the concentrations of blood glucose at the same level those in glucose ingested mice during endurance exercise. The concentrations of blood FFA at 0 and 15 min of exercise in La and Glc mice were significantly lower than those in Con mice. MCT1 and GLUT4 protein in La mice were negatively and significantly correlated with the concentrations of blood lactate. In La mice, PFK activity at 30 min of exercise was significantly lower than that in Glc mice. These results suggested that lactate ingestion before endurance exercise can maintain blood glucose concentration, and that lactate is used as an oxidative substrate during exercise.

**Key words:** lactate, ingestion, mice, endurance exercise