

## Effect of Traditional Concentrated Chicken Essence Supplementation on Reducing Exercise-induced Fatigue in Rat

Dao-An Li (Master)<sup>1</sup>, Mon-Chien Lee (Ph.D)<sup>1</sup>, Yi-Ju Hsu (Ph.D)<sup>1</sup>, Chi-Chang Huang (Professor)<sup>1\*</sup>

<sup>1</sup>Graduate Institute of Sports Science, National Taiwan Sport University, Taoyuan 33301, Taiwan

\*Corresponding author: john5523@ntsu.edu.tw

### Abstract

**Introduction:** Exercise-induced fatigue is a temporary physical phenomenon, which is the main reason that leads to the decline of exercise performance. However, providing proper nutrition supplementation may increase physical function, enhance resilience and even improve exercise performance. Traditional concentrated chicken essence (TCE) is a branched-chain amino acid (BCAA) rich supplement, which is known to maintains health, ameliorate digestion function and reduce fatigue. Therefore, TCE is considered as a supplement that has the potential of improving exercise performance. We aimed to evaluate the effect of TCE supplement on enhancing aerobic exercise performance and reduce exercise-induced fatigue.

**Methods:** Male SD rats were randomly divided into four groups (n = 10 per group) to receive vehicle or TCE by oral gavage at 0 (Vehicle), 0.5 (TCE-0.5X), 1 (TCE-1X), 2.51 (TCE-2X) g/kg/day for 4 weeks. Exercise performance were evaluated by run-to-exhaustion times, forelimb grip strength, glycogen contents, and fatigue-related biomarkers such as lactate, blood urea nitrogen (BUN), glucose and creatine kinase (CK) after physical challenge.

**Results:** Forelimb grip strength were higher in the TCE supplement groups, but no significant differences were found. The run-to-exhaustion times of the TCE supplementation groups were 27%, 34% and 46% higher than the vehicle group in the TCE-0.5X (p<0.05), TCE-1X (p<0.01) and TCE-2X (p<0.001) groups. Serum level of lactate after physical challenge were significantly decreased in the TCE-5X group than the vehicle group (p<0.0001). Glycogen contents in both muscle (p<0.05) and liver (p<0.01) were significantly higher in the TCE-5X group than the vehicle group.

**Conclusions:** Receive TCE supplement for 4 weeks can improves exercise performance, increase fuel storage in tissues and reduce exercise-induced fatigue in rat.

**Keywords:** Traditional concentrated chicken essence, Anti-fatigue, Treadmill exhaustion test, Glycogen storage