



Exercise Biochemistry Review

Proceedings of IBEC 2018, Beijing, China, October 23-25
OR-050

The Development of a Protein Powder Product with an integrated solution for Active Population

Junrui Cheng, Sophia Zhang, Sophia Zhang, Eric Du
Amway Research and Development Center

Objective Sports nutrition is expanding from professional athletes to a broader spectrum of consumers focused on fitness and improving overall wellness. The recommendation of combining exercise and healthy diet has been highlighted by Health China 2030 and National Nutrition Planning, leading to increased embrace of active lifestyle among Chinese people. Along with the increasing involvement in sports comes with concerns on decreasing resting metabolic rate due to weight loss, impaired joint health and post-exercise immunological response. To confront the above-mentioned challenges, we aimed to develop a product with an integrated solution to support fitness goals while diminishing exercise-related concerns.

Methods Literature review was conducted for core ingredient screen, followed by *in vitro* studies to substantiate and compare efficacy of ingredients from various resources. Muscle protein synthesis was measured in myotubes during the differentiation and fusion of *C2C12* myocytes. Myotube fusion density was quantified by ImageJ, an image processing program, subsequent to myotube staining.

Results Muscle mass gain enhances resting metabolic rate. It has been shown that whey protein supplementation at 20 g/d significantly increased lean muscle synthesis rate in post-exercise subjects. The efficacy of whey protein powder sourced from different resources were compared by conducting *in vitro* studies. A large body of evidence has shown that collagen peptide supplementation can mitigate joint pain and maintain joint health in athletic population. Yeast β -glucan was spotlighted as an immunity enhancer with antimicrobial protection and benefit in minimizing post-exercise immunosuppression.

Conclusions A protein powder containing over 20 g/serving whey protein, combining with collagen peptide and yeast β -glucan may convey beneficial effects in muscle synthesis, as well as protective effects against joint pain and post-exercise immunosuppression among active population. The combination of the above-mentioned ingredients could provide a well-round solution to confront the challenges that met by most active population.