

Research on Chicken Essence in the Promotion of Health, Wellness and Brain-Functions

Naiphinich Kotchabhakdi Ph.D.

Salaya Stem Cell Research and Development Project, Research Center for Neuroscience, Institute of Molecular Biosciences, Mahidol University, Salaya, Nakornpathom 73170 Thailand

Essence of Chicken (EC) has been widely consumed, particularly in Chinese communities in Southeast Asia, as traditional remedies and promotion for several ailments. It was also known to be beneficial in various conditions including: (A) Physical recovery from and nutritional supplement for the sickness that often occurs in postpartum women; (B) the physical development of athletes; (C) recovery from physical and mental Stress; and (D) stimulating and enhancing mental efficiency of students. Several scientific studies have been conducted over the years to uncover the promotion of health, improving brain functions and overall wellness benefits of consuming EC.

Published scientific research on EC can be traced back more than 20 years. It is a fat-free solution containing mainly proteins, peptides and amino acids. Clinical studies in the late eighties and early nineties first showed that EC significantly boosted general metabolism. Furthermore, several clinical studies demonstrated that EC measurably and favourably improves cognitive function in terms of mood, mental fatigue, stress tolerance, memory and sleep.

In 1987, research conducted by leading nutritionists at King's College in London demonstrated that 2 types of EC substantially increase mean metabolic rate by an average of 8% and 12 % above fasting baseline values compared to 2% and 4% increase with water or placebo. The response was greater than expected from the total energy and protein content of the essence, and sustained longer than three hours after consumption of EC. It was concluded that the acute metabolic response may be due to the effects of particular amino acid composition, other specific components and/or a cephalic (brain) response to taste.

In 1995, at the 7th Asian Congress of Nutrition in Beijing, China, many studies have shown that regular consumption of EC improve the absorption and utilization of iron to restore the body's ability to carry oxygen in the red blood cells. It was concluded that these effects were mediated by increase appetite and by enhanced availability of food iron. These studies provide objective evidence for the traditional belief that chicken essence helps recovery from anemia. Furthermore, BEC was shown to protect the disorder of metabolic function, such as glucose tolerance, serum ketone bodies, serum insulin, serum glutamate oxaloacetate transaminase (GOT), and also organ weights in mice caused by restrain-stress. In another study, L-anserine, which is a natural histidine-containing dipeptide abundantly occurring in chicken meat, markedly increases the colony forming units in the spleen of mice which received bone marrow cell transplantation after X-ray irradiation or a large

dose of cyclophosphamide as compared to the control group? It was speculate that the effect of L-anserine might be mediated by the augmented levels of endogenous cytokines and by the elevated proliferation of hematopoietic cells to colony stimulating factors.

In the study on the effect of BC on the recovery from fatigue caused by mental workload, mean serum cortisol level of subjects who consumed EC recovered significantly faster than those who consumed placebo after mental workload which included a mental arithmetic test and a short-term memory test. Subjects who consumed BEC also made fewer mistakes and had better memory skills than the placebo group. Moreover, according to the profile of mood state questionnaires, subjects felt more active and less fatigue during the workload when they took BEC regularly. It was concluded that EC has the potential to metabolize stress-related substance in blood and to promote recovery from mental fatigue.

Between 1996 – 7, oral feeding of EC in rats for the period of 3 days significantly increased the level of 5-hydroxyindole acetic acid in the cerebrospinal fluid in seven out of 12 animals. The result indicates that BEC increase the activity of brain 5-hydroxy tryptamine (serotonin) activity. The increase was certainly not due to the increased ingestion of tryptophan, the primary precursor of serotonin, because BEC contains undetectable level of tryptophan. Furthermore, the result suggests that by increasing the brain serotonin activity, BEC may also likely to activate serotonin-dependent physiological processes such as sleep improvement, mood elevation, analgesia, facilitation of motor activity, and regulation of circadian rhythm.

In a randomized double-blind placebo-controlled and cross-over study, 50 healthy adult male university students, who had no experience in consuming the Essence of Chicken (EC), participated in daily drinking of 2 bottles of 70 ml. of either EC or placebo. The placebo was made from a solution of collagen with the same color and in the same type of bottle, with similar amino acid profiles, but did not contain taurine and the peptides l-carnosine and l-anserine, which are relatively abundant in EC, and furthermore, these two peptides are also found to be important natural anti-oxidants in the brain and muscles. The subjects were randomly selected to start with either EC or placebo and continued to drink either in the morning or afternoon for 7 consecutive days. On each day after one hour of drinking, they were asked to complete a Self-Assessment with 14 items of subjective mood evaluation on visual analog scales. Data from all 7 days were pooled for all subjects to make final cumulative scores. After a 3-week wash-out period, the subjects were switched to the other drinking solution, and completed the same protocol. Results were statistically analyzed to compare between EC and placebo with ANOVA paired 2-tailed t-test as well as a paired non-parametric test using Wilcoxon signed rank. EC significantly reduces feelings of fatigue, stress, depression and confusion, while it increases feelings of alertness, refreshment and mental concentration. Recording of brain electrical activities by computerized EEG and topographic brain mapping showed significant increases in the total spectral power of brain electrical activities in the EC over the placebo group, which began 20 minutes after drinking and lasted for more than three hours. Synchronized alpha waves (8-13 Hz.) were significantly increased in the EC group during both eyes-closed and -opened periods. The beta

waves (14-30 Hz.), on the other hand, were significantly increased during the eyes-opened period while there seemed to be no significant changes in the delta (0-3 Hz.) and theta (4-7 Hz.) activities. Increases in alpha waves and synchrony are well-known to occur during various practices of mental relaxation and meditation, which allow the subject to reduce anxiety, and promote a better ability to concentrate and organize their mental thinking processes. The increase of beta waves during eyes-opened periods also indicated that EC enhanced the state of arousal and alertness. Levels of serum cortisol, measured by RIA method, were significantly lowered in the EC, as compared to the placebo group. The findings suggest that drinking EC can reduce stress and anxiety, and improves moods and brain functions and health.

In the meantime, Mechanistic studies indicate that EC has utility in addressing Metabolic Syndrome through improvements of blood glucose & lipid profiles, the prevention & reduction of hypertension, and also improvements in renal & hepatic functions which some of these efficacies derive from a naturally occurring Di-peptide found in EC.

Nowadays, EC has also been considered as an example of “Functional food” which provides a health benefit beyond the traditional basic nutrients it contains. It has properties, which may belong to physiologically active components, with the potential to prevent and/or treat diseases and promote optimal health, wellness, as well as brain functions. People who consumed EC consistently showed signs of increased energy levels resulting in higher mental and physical alertness.