

EVALUATION OF QUALITY CHARACTERISTICS OF LOW CHOLESTEROL  
EGG DEVELOPED BY CONTROLLING OIL SOURCES IN THE LAYER FEED.

Han C.K., Lee B.H., Lee N.H., Yoon C.S., Kang T.S., Sung K.S., Kim C.S., <sup>2</sup>Shon J.C.  
Korea Food Research Institute, <sup>1</sup>Department of Food and Nutrition, Chung-Ang  
University, <sup>2</sup>Jin-Yang Feed Mill Co., Ltd., Seoul Korea

This study was performed to develop layer feed supplemented with oil-blends displaying functionality in lowering yolk cholesterol concentration and in increasing  $\omega$ -3 fatty acid and in turn, controlling some adult diseases like coronary heart diseases as a series of previous study done in May, 1988 to April 1991. The layer formula consists of 5% fat level mainly coming from different oil sources (linseed oil, fish oil, tallow, lecithin). Isa Brown laying hen of 260, at twenty two weeks of age, were randomly assigned to 22 treatments with 2 replications by feeding four basal diets containing 5% linseed oil, 5% lecithin + linseed oil + tallow(20:60:20) with supplemental vitamin A(500% or 1000 the NRC) alone or combinations of vitamin E(300%, 500% the NRC) and Se(100% the NRC). In addition, commercial feed as a control and 3% fat group for economic purpose were employed. They were fed on commercial feed for the first week of the study and experimental diets for 16 weeks of screening test period. The parameters such as egg-hen day(EHD), the cholesterol lowering rate, the ratio of  $\omega$ -3 and  $\omega$ -6 fatty acid, color difference for egg yolk. Haugh unit, shell thickness, albumen pH, yolk protein and fat contents were recorded during 16 weeks of screening test. The results of the 16 week-preliminary study have shown that basal diet mainly composed of linseed oil among single oil treatments gave the best results in most of the parameters and lecithin + linseed oil + tallow(20:60:20) diet had a superior quality among mixed oil treatments. Not surprisingly the 1,000% vitamin A treatment had the highest EHD in all the treatments. In economical point of view supplementation level of fat may be lowered to the 3% level rather than the 5% level due to no significant effects of EHD, cholesterol lowering rate and  $\omega$ 3/ $\omega$ 6 ratios. For the future, the effectiveness in functionality of the low cholesterol egg on the lowering blood cholesterol must be proved in depth scientifically through the animal and human study.