Decrease in Blood Triglycerides Associated with the Consumption of Eggs of Hens Fed with Food Supplemented with Fish Oil

D. Faeh1,2, G. Madeleine1, B. Viswanathan1, F. Paccaud2, P. Bovet1

1Unit for Prevention and Control of Cardiovascular Disease, Ministry of Health, Seychelles, 2University Institute of Social and Preventive Medicine, Lausanne, Switzerland and 3Department of Physiology, University of Lausanne, Lausanne, Switzerland

Introduction

N-3 polyunsaturated fatty acids (n-3 PUFA) convey several health benefits, including a reduction of serum concentration of triglycerides.

Objective

To examine changes in blood lipids in healthy volunteers after consumption of n-3 PUFA enriched eggs. These eggs were obtained by feeding hens with food supplemented with fish oil. The study took place in the Seychelles (Indian Ocean).

Design

Double-blind crossover trial with two groups of healthy volunteers. One group consumed one normal egg each workday during 3 weeks (i.e. 5 eggs per week) and one n-3 PUFA enriched egg each workday during the second 3-week period. The other group received eggs in the inverse sequence.

Results

Hens’ food was supplemented at 5% with tuna oil. Enriched eggs had content in n-3 PUFA per egg nine times higher than usual eggs (mainly docosahexaenoic acid).

Comparing pooled results at 3 and 6 weeks, serum triglycerides concentration was 15.2% (P<0.05) lower with n-3 PUFA enriched eggs than normal eggs with no significant difference in LDL-cholesterol and HDL-cholesterol.

Conclusion

The decrease in serum triglycerides with a moderate consumption of eggs enriched with fish oil suggests that these eggs could be a palatably acceptable source of these essential nutrients.

Participants did not report a systematic preference for either type of eggs.

Figure 1. Crossover design: The 25 participants were divided in group A (n=11/10) and B (n=14/13). There was one drop out in each group. Group A received normal (N) eggs during the first 3-week period and n-3 PUFA enriched eggs (E) during the second 3-week period. Group B had the inversed sequence of group A. Blood samples were taken at baseline (A-b & B-b) after normal egg period (A-n & B-n) and after n-3 PUFA enriched egg period (A-e & B-e).

Figure 2. Cholesterol and fatty acid content of normal and n-3 PUFA enriched egg (g/100g of yolk)

Figure 3. Percent changes in blood lipids associated with the consumption of normal eggs (N) or n-3 PUFA enriched eggs (E). Pooled results after the two 3-week periods of both groups of participants (A & B). *P<0.05

Serum LDL-cholesterol increased during the first 3-week period and decreased during the second 3-week period with both n-3 PUFA enriched eggs and normal eggs.