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

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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.

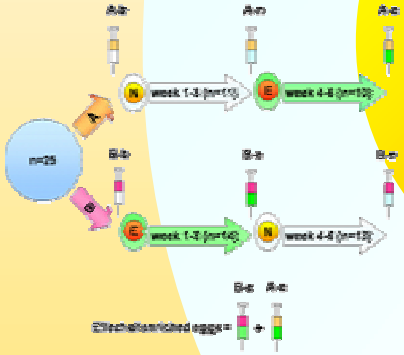

Figure 1. Crossover design: The 25 participants were divided in group A (n=11/10) and B (n=14/13). There was one drop out in each group. Group A received normal (N) eggs during the first 3-week period and n-3 PUFA enriched eggs (E) during the second 3-week period. Group B had the inversed sequence of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

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).

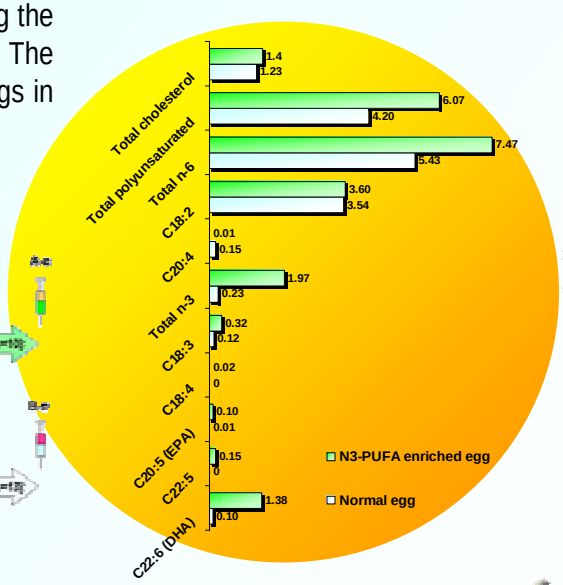

Figure 2. Cholesterol and fatty acid content of normal and n-3 PUFA enriched egg (g/100g of yolk)

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

- 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.

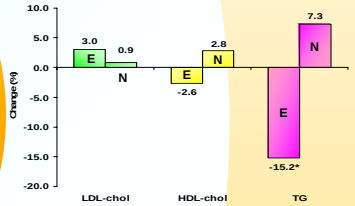

Figure 3. Percent changes in blood lipids associated with the consumption of normal eggs (N) or n-3 PUFA enriched eggs (E). Pooled results after the two 3-week periods of both groups of participants (A & B). *p<0.05

- 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.

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.