



## INTRODUCTION

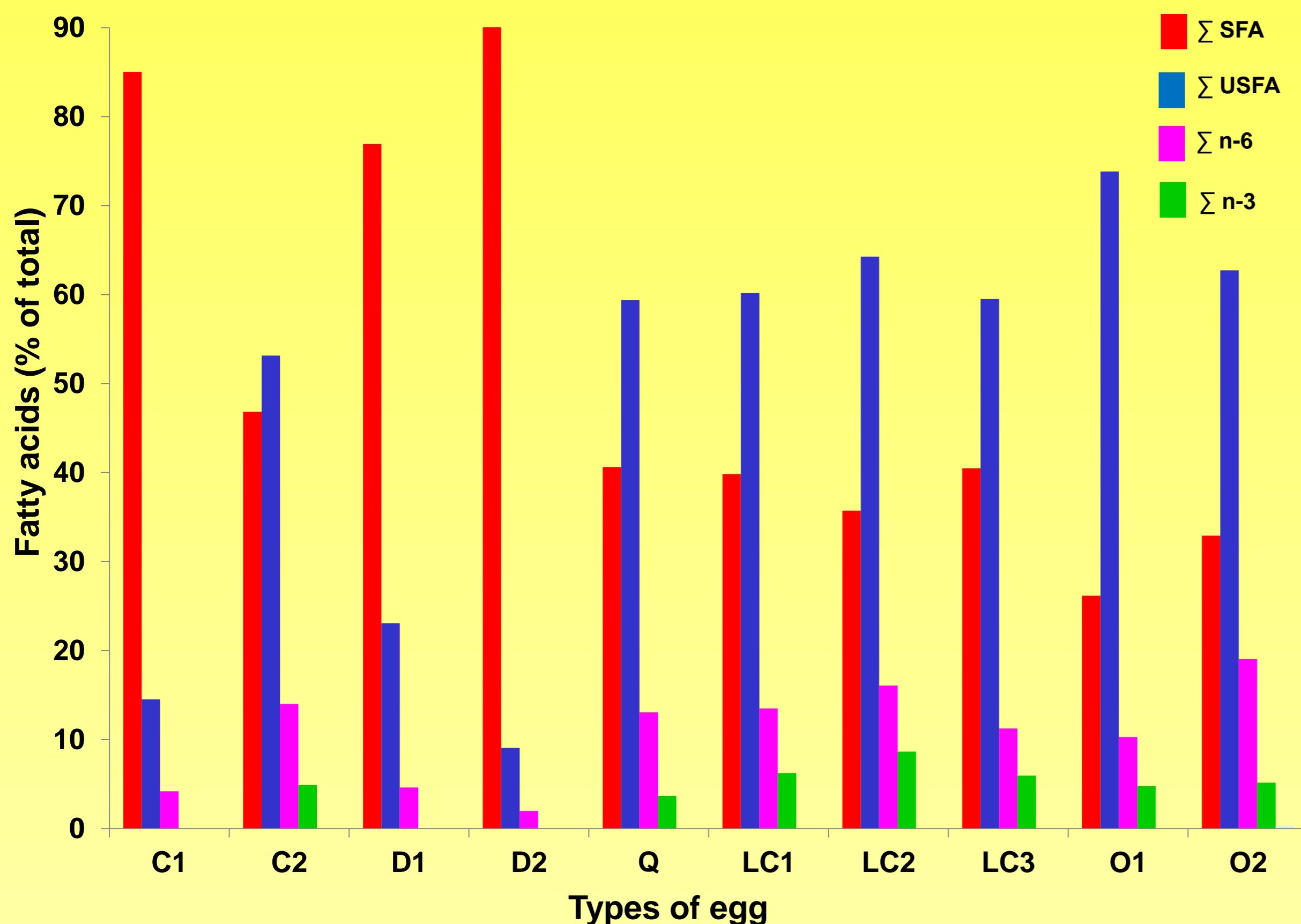
The interest in functional foods, including egg with health benefits are increasing nowadays as consumers are more concern about healthier diets. These food products are sold at a higher price with captivating claims to attract the consumers. Different brands of egg enriched with vitamins, minerals and omega fatty acids (FAs) or labelled as lower in cholesterol are available on the market. Currently, the FA content, especially the omega FA are not monitored. The objective of this study was to monitor the FA content of these egg whether it's true as the label stated.

## METHODOLOGY

- 10 egg types (classified as 'common' (5), 'lower-cholesterol' (3) and 'omega' (2)) were purchased from supermarkets around Selangor.
- Determination of FA content involved extraction using chloroform:methanol (Folch method) with slight modification and derivatized by boron methoxide (1). The extracts were then analysed by Agilent 6850 Series GC System gas chromatography-flame ionisation detector (GC-FID).

## RESULTS AND DISCUSSION

Fig 1. Summary of total fatty acid content in different types of egg in local market



Values are mean of % from n=3

Common eggs consist of C : chicken, D: duck, Q: quail

LC: Lower-cholesterol eggs, O: omega-enriched eggs

Σ : total, SFA: saturated fatty acid, USFA: unsaturated fatty acid

n-6: omega-6, n-3: omega-3

## CONCLUSION

Labelled omega-eggs (and lower-cholesterol eggs) are proven to contain higher n-6 and USFA content. However, the n-3 FA content (the main composition that promotes healthier claims) were not varied much than the other type of eggs.

## REFERENCES

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- About 26 fatty acids (FAs) were detected in the egg samples.
- The highest FA content:
  - In common egg (chicken & duck): saturated fatty acid (SFA) (mostly butyric acid, C4:0 or palmitic acid, C16:0 which ranged from 33 – 84%).
  - In quail egg, lower-cholesterol (LC) & omega-eggs (O): unsaturated fatty acid (USFA) (mostly oleic acid, C18:1n9c or elaidic acid, C18:1n9t which ranged from 30-38%).
- Total USFA in LC & O were significantly higher than most of the common eggs (the highest in egg O1, at 74%). The label on the respected egg claimed it to be enriched with omegas and DHA.
- LC eggs contained ≈ 60-64% total USFA.
- All egg types contained omega-6 (n-6) FA (4.20% to 19.04%); the highest was in egg O2.
- Omega-enriched egg was being promoted as a healthier choice due to its high omega-3 (n-3) FA content.
- 7 egg types contained n-3 FA content either linoleic acid (C18:3n3), eicosatrienoic acid (C20:3n3) or DHA (C22:6n3), with DHA being the highest (2.5-6.3%).
- Total n-3 < total n-6 FA content. The highest total n-3 FA content in LC2 egg (8.65%), were significantly higher than quail egg (3.68%). The n-3 FA content in omega eggs were reported at 6.57% in a study done in 2000 (2).
- A 10:1 ratio of dietary n-3:n-6 FAs was recommended in human diets (3). The ratio for all the egg samples was very low, below 1%. The highest ratio was in LC2 (0.54) & the lowest ratio in O2 (0.27).
- O2 egg, despite having comparable n-3 FA content, also had the highest n-6 FA content. This makes the ratio to be low and perhaps not the best choice of healthier egg among the rest.