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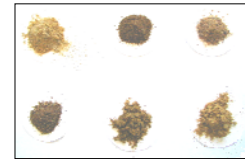
Introduction

According to the 1774/2002 EC regulation, animal by products (ABP) of categories 1 and 2 can not be incorporated in feed. They should also be marked in order to avoid their incorporation after “processing” in the feed. The addition of fat in feed process is almost unavoidable. Beside the energy supply, it improves the absorption of fat-soluble vitamins, diminishes the pulverulence, and increase the efficiency of the consumed energy. Lubricant properties of animal fats are also necessary in concentrate processing technologies.

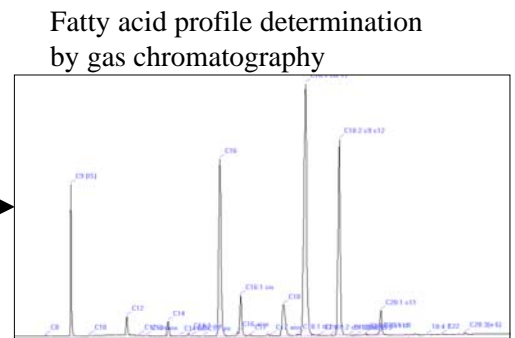
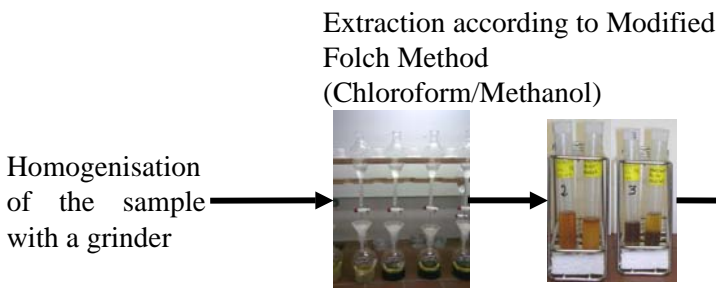
In the framework of the Community Reference Laboratory (CRL-AP), we investigated the use of gas chromatography (GC) as a promising method to discriminate animal species from fat extracted from feeds.

Samples

20 pure animal meals obtained from local and european factories : Fish (7), Cow (7), Chicken (3) and Pork (3)



Material & Methods



Results & Discussion

Fatty acid profiles have been subjected to chemometrics techniques. It showed that it was possible to discriminate some species according to their fatty acids (FA) profiles. Principal Component Analysis of the FA profiles show that the first Principal Component explains 49% of the variability and allows to discriminate clearly fish from other animal fats, the second Principal Component explain 23% of the variability and permits to separate chicken from the pork-beef group.

From the examination of the loadings it was proved that that 12 major fatty acids are sufficient to discriminate feedfat samples according to their species origin : C14, C16, C16:1 c, C18, C18:1 c, C18:1 t, C18:2 c9 c12, C20:1, C22, C20:3(n-6), C20:4(n-6) and C20:5(n-3).

Conclusion & Perspectives

The gas chromatography combined with chemometric techniques (PCA in our study) have shown its capability to discriminate feedfats from pure animal meals according to their species.

In this study we used pure feed fats, the next step will be the use of mixture of fats and from more sources like vegetable oils.

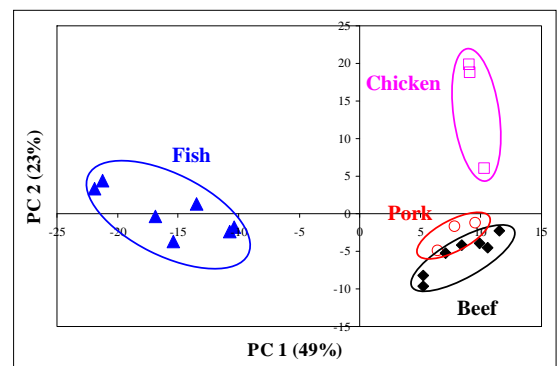


Figure 1: Principal Components Analysis of feedfats Fatty Acid profile.

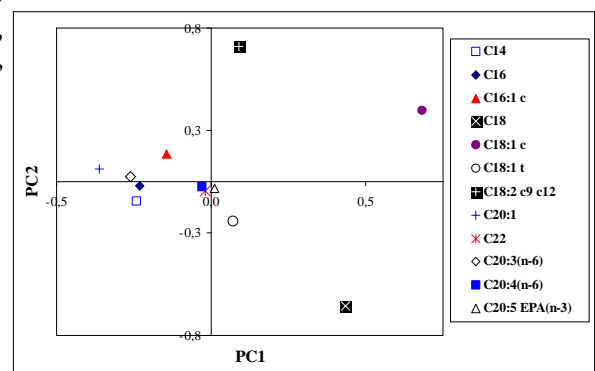


Figure 2: Loadings of Fatty acids showing the contribution of each fatty acid to PC1 and PC2.