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NUTRITIVE VALUE OF CO-PRODUCTS DERIVED FROM OLIVECAKE IN RABBIT FEEDING

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Abstract: Olive cake is one of the main agro-industrial co-products in the Mediterranean area of Spain, with high availability almost all year round. In addition, most of the product is dehydrated, which increases its interest in monogastric species such as rabbits. Nineteen samples from various Spanish oil mills using different processing methods were analysed for their chemical composition and *in vitro* digestibility. The average composition was [in dry matter (DM) basis]: ash (9.64%), neutral detergent fibre (52.0%), acid detergent fibre (36.8%), acid detergent lignin (19.1%), crude protein (CP) (11.3%), insoluble neutral (8.0%) and acid detergent crude protein (5.15%), ether extract (10.9%) and gross energy (21.9 MJ/kg). DM and CP *in vitro* digestibility were, on av., 53.4 and 41.4% respectively. High variability was observed among the samples for most of the traits studied. Fibrous fractions were highly correlated among them and negatively with ether extract content, whereas CP was little related to other feed components. A stepwise regression analysis allowed us to determine regression equations to predict DM and CP *in vitro* digestibilities from chemical composition (R^2=0.80 and 0.91, respectively). As regards the current results, olive cake has a potential use for rabbits as a source of insoluble fibre and lignin. Crude samples (not oil extracted) combined with sieving to retain the smaller particles have an additional interest, because of their higher energy value and significant supply of high quality fat.

Key Words: olive cake, processing, nutritive value, rabbits.

INTRODUCTION

For the agri-food industry, the use of its co-products into animal feed represents a mean of nutrient recycling and should be considered as a priority way of by-product elimination. Accordingly, the use of agro-industrial co-products can be expected to have a positive economic impact and a reduction of the environmental burden.

Olive cake (OC) is a by-product of olive oil manufacturing. The pomace produced in mills contains between 18 and 32% of stones (Nefzaoui, 1979). Stones are usually separated to be used as biomass for their high value for this purpose. Crude OC contains a significant amount of oil that can be extracted totally (exhausted, EOC) with hexane. EOC is currently the most common oil co-product marketed in Spain, mostly being used as biofuel. A small part is utilised in the form of dark coloured granules for feeding ruminants bred in extensive systems.

The final yield in the process is 25-40 kg of crude OC per 100 kg of olives (Eraso *et al.*, 1978), which means a potential production in Spain of around 2 million tonnes per year of EOC dehydrated. On some occasions, OC can be marketed crude or partially oil-extracted using physical methods. In either case, previous dehydration of the product is required. Dehydration is performed using different procedures which vary in terms of the applied temperature and drying time. The traditional method is by drying drum powered by gases from the combustion of EOC. Some industries have implemented a new method of drying using exhaust gases from engines and turbines (cogeneration). There are

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