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Nutritional value of cooked offal derived from free-range rams reared in South Africa

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Abstract

Nutritional value of Dorper (n = 10) and Merino (n = 10) by-products were evaluated. Proximate composition differed between organs and breeds with Merino heart (68.9 g/100 g), spleen (77.2 g/100 g) and testicles (83.7 g/100 g) having higher moisture contents than their Dorper counterparts. Dorper brain (10.1 g/100 g), heart (15.2 g/100 g), spleen (20.4 g/100 g) and testicles (12.9 g/100 g) had higher protein contents than Merino. Dorper organs also tended to have a lower fat content. Amino acid and fatty acid profiles differed between organs and breeds. Few differences were noted in total SFA and MUFA. Dorper heart (1.8%) had significantly lower total PUFA than Merino heart (7.3%). All the organs showed favourable P:S ratios, with the exception of the tongue, heart and stomach. Dorper and Merino brain, lungs and testicles had favourable n – 6/n – 3 ratios. Cholesterol content differed between both organs and breeds. The value of offal as food is discussed further.

1. Introduction

The so-called fifth quarter of a carcass is traditionally consumed in a number of countries and its general consumption around the world is escalating. Organs recovered from slaughtered animals offer a range of foods which are nutritionally attractive (U S Department of Agriculture & Agricultural Research Service, 2011). Edible organs are highly prized in South East Asia and Africa, whilst demand is variable and low in Australia and USA, respectively (Fatma and Mahdey, 2010 and Pearson and Dutson, 1988). In some African countries, edible offal contributes 33% more edible material per animal slaughtered and reduces the whole carcass price by 42.3% (Aduku, Aganga, Okoh, Ingawa, & Phillip, 1991). In South Africa, when visiting abattoirs, managers and owners are quick to point out that the value of the offal (organ meat) is on the increase. Offal was traditionally sold to the lower income market; however, with the increase in tourism, some of the offal products are becoming delicacies in niche markets, particularly in restaurants. In the Encyclopaedia of Meat Sciences, Ockerman and Basu (2004) give a good synopsis of some of the products that can be made from various organs/variety meats. Irrespective of who the end consumer is, there is a need in the industry for more information on the nutritional value of the major offal found in livestock. Scientific literature on the nutritional value of offal is relatively scarce with limited data available on the internet in the form of nutritional food tables — the USDA Nutrient database does contain some nutritional information under the caption of “variety meat and by-products” (U S Department of Agriculture & Agricultural Research Service, 2011). These, however, are generally species specific with few focusing on nutritional composition differences as a result of other extrinsic and intrinsic factors. Authors such as Park, Kouassi, and Chin (1991) have, however, reported slight differences between goat breeds for the moisture, total fat and cholesterol content of the liver, kidney and heart. In a later study, Park and Washington (1993) reported significant differences in the fatty acid composition of organ meat between two goat breeds and between organs within the breeds. On the other hand,

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