

In order to prevent these risks, it is indispensable to learn more on the breeds and breed farmer's motivation for anarchic breeding practices. This study was aimed at prospecting farmers' management followed by an inventory and morphological characterization of these ovine resources in their own ecosystem. Investigation data were analyzed by SAS software (SAS V9).

Ninety breeders were surveyed among which 91% stemming from the rural population show three main types of traditional systems exploiting ovine resources according to their food behavior and breeding environment: the extensive system (30% of the breeders) where supply is essentially based on natural pastures; the semi-extensive system (65% of the breeders), which associates breeding and where the agriculture is expanding in the sahel; the Urban and Outer-urban system (5% of the breeders) in which the main part of animals supply comes from household residues and some bought feed. Moreover, in these systems, cross-breeding is common, thus, about 51% of the investigated breeders have crossed subjects voluntarily or not in their herds.

The characterization investigations were carried out on 324 Niger sheep; the breed phenotypic characterization for their production field, spread over 4 ethnic regions (*Fakara, Sinder, Manga and Zarmaganda*) and concerned 5 Niger native sheep breeds among which three meat breeds: the *Oudah* with two-colored fleece and *Bali Bali* with fleece are both of big size and raised by *Fulani* communities in southwest areas; the *Tuareg Ara Ara* breed is high on leg with average size being used in the north pastoral regions; two wool breeds – the *Koudoum* found on the banks and *Kourtèye* islands of Niger River and the *Toubou* or *Hadine* breeds in Manga (in the southeast); Besides these breeds, there are two breeds introduced for strong butcher capacities – the *Balami* (native of Nigeria) introduced constantly by shepherds into border areas of Nigeria and the *Sudanese* (native of Sudan) introduced recently into Manga areas via the Chadian border.

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Meat quality potential of Creole goats fed two contrasted diets: fatty acid composition of fat and muscle tissues

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Introduction

In the Caribbean region, goat farming is centered on the Creole breed which is a hardy genotype reared for meat, known for its good adaptative and reproductive traits (Alexandre and Mandonnet, 2005). Published information on the meat potential ability of this breed is scant and there is lack of factual data on intensive feedlot systems. Increasing kid performances using high concentrate diets may result in fat carcasses (Webb *et al.*, 2005; Ryan *et al.*, 2007). The objective of this study was to assess the effects of diet upon the fatty acid (FA) composition of the fat and muscle tissues.

Materials and methods

After weaning (9.2 kg LW), 91 kids were reared in collective pens on a slatted floor and allocated by weight and preweaning growth and randomly assigned to 2 experimental groups. In group C0 ($n = 45$) kids were offered basal tropical forage diet while in group C50 ($n = 46$) they were also offered concentrate (50% of the diet). Animals were sacrificed according to standardized procedure. After removal of the left shoulder on the cold carcass, supraspinus muscle (SE) and intramuscular (IM) fat were dissected for chemical determination. The FA extraction was carried out as described by Bas *et al.* (2005). The FA were added up according to family: SFA = Saturated FA; MUFA = Monounsaturated FA and PUFA = Polyunsaturated FA. Data were analysed using PROC GLM (SAS, Inc) with diet as the main effect in the model and carcass weight as covariable (kept in the model when significant).

Results and discussions

The diet greatly influenced the meat quality, mainly due to the addition of concentrate and as reported elsewhere (Webb *et al.*, 2005). In regards to SFA health aspects, goat meat composed of IM and muscle tissues was not different (Table 1a, 1b.). The results are controversial in the literature as reviewed by Webb *et al.* (2005). Creole goats contained higher MUFA and PUFA in SE muscle, which are considered as desirable FA (Pratiwi *et al.*, 2006). The total odd FA ranged from 2.3 to 4.4% of the total FA in all tissues, and the results are in the lower range of what is usually observed except for the C0 kids whose results agreed with those of Bas *et al.* (2005) on kids under Moroccan conditions. The proportions of FA from the n-3 series were classically higher in the muscle than in the fat tissues. Values were in the range observed in goats fed argan pulp (Bas *et al.*, 2005), but lower than those fed browse-diet (Ryan *et al.*, 2007). A greater enrichment in n-3FA in kids fed forage resulted to a better ratio of n-6/n-3 FA composition (Pratiwi *et al.*, 2006; Ryan *et al.*, 2007).

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Table 1 Major fatty acid (FA) proportions (g 100 g⁻¹ of FA) of Creole goat according to diet (values with different superscripts, a and b, are different, $P < 0.01$)**Table 1a** *intermuscular (IM) fat tissue*

C group	C0	C50	SE
DM, %	53,77 ^a	64,23 ^b	18,29
Lipid content, %	71,60	80,03	19,16
SFA	50,97 ^a	46,47 ^b	4,96
MUFA	35,13 ^a	40,60 ^b	4,95
PUFA	4,63	4,70	0,66
odd chain FA	3,87 ^a	3,10 ^b	0,64
n-6 FA	2,37 ^a	3,10 ^b	0,51
n-3 FA	1,07 ^a	0,53 ^b	0,21

Table 1b *supraspinus (SE) muscle tissue*

group	C0	C50	SE
DM, %	30,40	30,13	10,51
Lipid content, %	11,00	11,33	3,96
SFA	41,50	41,27	3,37
MUFA	37,20 ^a	39,27 ^b	2,48
PUFA	9,97	10,70	2,01
odd chain FA	3,73 ^a	2,70 ^b	0,40
n-6 FA	6,53 ^a	8,97 ^b	1,87
n-3 FA	2,40 ^a	0,90 ^b	0,43

Conclusion

The Creole goat shows the ability to be reared under intensive conditions while maintaining low proportions of fat in the meat. From a nutritional point of view, meat from kids fed all-forage diet seems very favorable. Focusing on FA which are supposed to have beneficial or adverse effects on human health, concentrate supplementation did not greatly alter the meat diet quality. Further studies are required to determine the best level of concentrate in the diet when taking into account carcass and meat traits.

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Nutritive Aspects of Goat Meat for Developing Countries

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Goat meat is widely eaten throughout the world. It is used more than other farmed animal meat in warmer climates. The dressed carcass of a goat commonly yields 40–55 percent of the live weight. The factors contributing to the variation are discussed. Over the years the tendency

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