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Short communication

Nutritional Evaluation of Porcupine Meat Compared to Sheep and Cow Meat

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ABSTRACT

This study was conducted on porcupine meat, as many people in the eastern region of Libya consume it. The study measured the protein and fat content, as well as the composition of some amino acids, and compared them to sheep and cattle meat. The study used the Kjeldahl apparatus to measure protein, the Soxhlet apparatus to measure lipids, and high-pressure liquid chromatography to measure amino acids. The results showed that the protein content of porcupine carcasses was higher than that of sheep and cattle, and that the fat content was also higher than that of cattle and sheep. Based on these findings, further studies are needed to protect these animals from extinction due to overhunting. It is also recommended that they be raised to help increase local meat production.

Introduction

The eastern region of Libya is one of the regions of North Africa that deserves environmental research due to its biological diversity, as it includes many wild animals and is considered one of the most important centers of biological diversity in the world. It also enjoys the meeting of the desert with the green forest, which is why the study area was called the Green Mountain [1,2]. This animal is a rodent and is not a domesticated animal, but its meat is delicious, so we notice the excessive hunting of these animals; however, there are not enough studies and information about this animal [3]. This animal weighs an average of 3 kg and lives on eating roots and seeds. It can be raised in pens [4]. The meat of these animals is a source of income for many hunters in Africa, such as Libya, South Africa, and Nigeria [5]. In some desert and rural areas of Africa, the meat of this animal is the primary source of protein [6]. The meat of these animals is considered a very cheap and economical source compared to the meat of poultry, sheep, camels, and cattle [7]. This meat is obtained from the wild through hunting and is consumed in many African countries, especially Nigeria, Tanzania, and South Africa [8].

Bush meat often contains higher levels of protein and unsaturated fats than traditional animals such as cattle, sheep, and goats, due to the type of food these animals feed on in forests and plains, which gives it a high nutritional value [9]. Some studies have shown that this meat plays a role in treating impotence [10]. The main objective of this study was to demonstrate that the meat of these animals contains high amounts of protein and amino acids. Veterinary authorities should also prevent the overhunting of these animals and focus on breeding them to increase local meat production [11].

Methods

Twenty-five meat samples from the targeted animals were collected in agreement with a number of hunters, preserved, and transported fresh to the Food Laboratory at the Faculty of Veterinary Medicine, Omar Al-Mukhtar University. Protein content was measured using the Kjeldahl apparatus, fat content using the Soxhlet apparatus, and amino acids were measured using high-pressure liquid chromatography [1]. All analyses of sheep and beef meat were also carried out.

Results and Discussion

Table 1 shows the nutritional components of the analyzed porcupine carcasses, while Table 2 shows the amino acid composition. After analysis, the carcass was found to be high in protein and fat.

Table 1. The nutritional value of the porcupine carcass.

Nutritional composition	(g/100g)	Nutritional composition
Protein	48.50	Protein
Fat	46.77	Fat

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Table 2 shows that the amino acid content of porcupine meat is significantly higher than that of sheep meat, especially glutamic acid and aspartic acid, which are neurotransmitters also useful in sexual activity processes [6, 7]. The nutritional value of meat can be determined by the quantity and quality of the amino acids present. Glutamine is found in the highest proportion in meat, followed by aspartic acid, then lysine. These results are consistent with [8].

Table 2. The composition of some amino acids in the carcasses of porcupines, sheep, and cows.

Amino Acid	Porcupine meat	Lamb meat	Beef
Valine	2.5%	0.66%	2.77%
Lysine	4.3%	0.66%	3.95%
Glycine	3.4%	0.7%	2.80%
Histidine	1.90%	0.80%	2.7%
Serine	1.87%	0.40%	1.3%
Alanine	3.1%	0.18%	4.1%
Arginine	2.88%	0.77%	1.90%
Proline	1.90%	0.15%	3.66%
Glutamic acid	6.77%	1.79%	5.99%
Aspartic acid	4.7%	0.67%	3.80%

This comparison showed that porcupine meat was higher in protein and fat compared to beef and sheep meat. It is known that protein is one of the most important components of meat, and of course, its percentage varies in the meat of different animals [4, 11]. The high percentage of protein in porcupine meat is attributed to the variety of pastures of this animal and the quality of the food it eats, as stated in a study [12, 13]. Increasing protein in porcupine meat increases sexual desire and treats some nutritional problems [14]. The fat content of porcupine meat can affect a person's diet, depending on the composition of the fatty acids it contains. Eating porcupine meat can improve mood, according to a study [15].

Table 3. Comparison between the meat of the slaughtered ostrich and the meat of sheep and cows.

Meat source	Protein (%)	Fat (%)	Reference
Porcupine meat	48.50	46.77	This research
lamb meat	19.77	2.30	***[9]***
Beef	21.70	1.32	***[10]***

Conclusion

This study showed that the meat of porcupine carcasses contains a high level of protein and fat compared to sheep and cow carcasses, and also contains a high percentage of amino acids, higher than sheep carcasses and close to cow carcasses. Therefore, we conclude that this animal is important in providing meat that contains a high amount of important nutritional elements, and the veterinary authorities should direct the breeding of this animal, especially since it is a root animal that feeds on all types of plants in the areas where the study was conducted, knowing that it is one of the animals facing the risk of extinction due to overhunting.

Conflict of interest. Nil

References

1. Boufatah SM, Mkedder I, Gaouar SBS. Contribution to the morphometric characterization and physico-chemical analysis of meat of porcupines (Hystrix cristata) in Tlemcen region. Genet Biodivers J. 2022;6(1):1–15.
2. Bufarwa S, Abdel-Latif S, Bahnasy HB. Spectroscopic, thermal, and conductometric studies of some (arylazo) quinolin-8-ol and their complexes with the divalent ions of Mn, Ni, Cu, and Zn. Eur Chem Bull. 2023;12:187–97.
3. Gomez L. The illegal hunting and exploitation of porcupines for meat and medicine in Indonesia. Nat Conserv. 2021;43:109–22.
4. Anita S, et al. Nutritional components from the tail meat of Sunda porcupine (Hystrix javanica F. Cuvier, 1823) that could be related with aphrodisiac potency. In: Proceedings of the 4th International Symposium for Sustainable Humanosphere (ISSH)–A Forum of Humanosphere Science School (HSS); 2015; Jakarta, Indonesia. Jakarta: Research Center for Biomaterials–LIPI.
5. Roze U. The North American porcupine. Ithaca (NY): Cornell University Press; 2009.

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6. Inayah N, et al. Diet enrichment and the reproductive season of captive Sunda porcupine (Hystrix javanica F. Cuvier 1823). BIO Web Conf. 2020;19:00005.
7. Abduljalil N, et al. Synthesis, characterization, antimicrobial activity, DFT, molecular docking, and ADMET of 4-chlorophenyazolquniolin-8-ol and its metal complexes. AlQalam J Med Appl Sci. 2024;566–82.
8. Karima IW. The physical quality of meat and muscle microstructure of Javan porcupine (Hystrix javanica) are given on addition of concentrate into feed. [unpublished manuscript].
9. Jiao J, et al. Carcass parameters and meat quality of Tibetan sheep and Small-tailed Han sheep consuming diets of low-protein content and different energy yields. J Anim Physiol Anim Nutr. 2020;104(4):1010–23.
10. Oddy V, Sainz R. Nutrition for sheep-meat production. [place unknown]: [publisher unknown]; 2002.
11. Saleh M, et al. Algal bioremediation: heavy metals removal and evaluation of biological activities in sewage plant. J Surv Fish Sci. 2023;1355–65.
12. Brooks EG, Roberton SI, Bell DJ. The conservation impact of commercial wildlife farming of porcupines in Vietnam. Biol Conserv. 2010;143(11):2808–14.
13. Saleh M. Determination of some chemical composition and heavy metal accumulation of gilthead seabream (Sparus aurata) fish in the Al-Jabal Al Akhdar coast–Libya. MISJ Int J Med Res Allied Sci. 2023;1(2):64–71.
14. Ogbeide O. Nutritional hazards of food taboos and preferences in Mid-West Nigeria. Am J Clin Nutr. 1974;27(2):213–6.
15. Ebewore S, Ovharhe O, Emaziye P. Acceptability of bush meat as a source of animal protein in Delta State, Nigeria: implication for extension services. J Northeast Agric Univ (Engl Ed). 2015;22(3):67–78.

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