PHYSICO-CHEMICAL COMPOSITION AND FATTY ACIDS PROFILE IN DIFFERENT MEATS, BEEF AND PORK MEATS

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Background

The interest of different meats has been increasing in Brazil by consumers, producers and Environment Protection Institutes. This kind of meat has been more profitable due to the cost of production being the same of the traditional meats but the price of selling is higher than the traditional meats. The IBAMA (Brazilian Institute of Environmental and Natural Renewable Resources), this institute has been encouraging the manufactures of this wild animals, like Cateto meat (*Tayassu tajacu*), Queixada meat (*Tayassu pecaris*), Boar meat (***Sus s. scrofa)*** and Capybara meat (*Hydrochaeris hydrochaeris*), because they can control the number of wild animals, illegal traffic and preserve the natural surface that can be used as an economic activity (GARCIA, 2000; NAVA et al., 2002). The variation of the components in different muscles, like tenors of protein, lipid, humidity, ash, fatty acid and others components, are due to intrinsic factors on the animal like sex , race, muscles, age and others (PARDI, 1995).The human diet is formed by a complex mixture of organically and inorganically substance for nutrition and preventing against any anomaly (MENDES, 1998). It is known that the largest number of premature deaths at the Occidental Society is caused by vascular obstructive diseases, due to high consumption of saturated fat. The saturated fat increase the level of cholesterol in the blood, while the consumption of polyunsaturated fats reduce the rate of cholesterol. Diet feed, the natural fats source is composed by fatty acids, saturated (lauric, miristic, palmitic, stearic), monounsaturated (palmitoleic, oleic) and polyunsaturated (linoleic, linolênic, arachidonic, □-3).To promoted a good health, it is necessary to eat less them 30% of the energetic contents of the total diet and 70% of the swallow need to be composed by unsaturated acids fats (MONTGOMERY,1996). Due to the importance of the nutritional composition in a human diet, the consumers need more information about food composition , in spite of, according to TORRES et al.(2000) it doesn't exist any actual complete table.

Objetives

The objective of this work was to determine the physico-chemical composition and the fatty acids profile on the Cateto, Queixada, Boar, Capybara, Buffalo, Lamb, Goat, Beef and Pork meats.

Methods

The physico-chemical determination were realized following the methods described by LANARA (1981). To determine the fatty acids profile , the lipid was extracted according to LANARA (1981), made the saponification, metilation and extractive method according to SANTANA (1995). The results obtained after the determination of chemical composition and fatty acids profile were statistically analyzed using the software MSTATC version 2.10 of MIS (1989).

Results and Discussion

In comparison with the results obtained, of the physico-chemical composition of meats, using the values mentioned by ENDEF (1999), USP (2002), USDA (2002) and FRANCO (1999), in Table1.

Table 1 – Results of physical-chemical composition of meats.

Meats	Physical-chemical composition				
	pH	Protein (g/100g)	Lipids (g/100g)	Humidad (g/100g)	Ash (g/100g)
Lamb	5,4	19,09 ±0,42 bcd	2,15 ±0,34 cd	77,8 ±0,07 c	0,96 ±0,04 c
Goat	6,4	19,01± 0,14 cd	3,78 ±0,26 b	69,32 ±2,27 b	1,19 ±0,07 ab
Capybara	5,8	21,53 ±0,61 ab	0,82 ±0,03 e	74,34 ±1,11 a	1,22 ±0,09 a
Cateto (Tayassu tajacu)	6,6	22,77 ±0,43 a	1,17 ±0,12 de	74,75 ±0,18 c	1,31 ±0,03 a
Queixada (Tayassu pecaris)	5,8	22,88 ±0,36 a	0,75 ±0,03 e	75,03 ±0,19 c	1,34 ±0,05 a
Boar	6,2	16,66 ±0,36 d	5,82 ±0,86 a	71,03 ±0,45 ab	1,07 ±0,05 bc
Pork	5,6	20,48 ±0,25 abc	5,87 ±0,57 a	69,28 ±2,07 b	1,04 ±0,02 c
Beef	5,2	21,18 ±0,29 ab	3,05 ±0,13 bc	71,81 ±0,09 ab	1,02 ±0,00 c
Buffalo	5,2	20,36 ±0,86 abc	5,33 ±0,81 a	71,12 ±1,12 ab	1,05 ±0,01 bc

The results presented a significant difference, Tukey ($p<0,05$).

It is possible to see that the less value of protein was 16,66% at Board meat, differing of the results obtained by USDA (2002). Cateto and Queixada meats has almost the same protein value 22,77% and 22,88%, respectively. The protein value of 20,48% presented in pork meat is almost the same presented by ENDEF (1999), USP (2002) and USDA (2002). The lower value of lipids 0,75% was found in Queixada meat and 0,82% in Capybara meat, which was near the value found by USP (2002). The bigger value was found at Buffalo meat,5,33% which is bigger then the value from USDA (2002), 5,82% in Boar meat, which is bigger then the value from USDA (2002), 5,87% in Pork meat, which is near the value recorded by USP (2002), USDA (2002) and lower them quoted by FRANCO (1999). The percentage of ash found in different meats analyzed, were almost the same. However the fatty acids profile were different from each meat, in Table 2 and 3, excepting Cateto and Queixada meats, which have very similar profile. The higher value of saturated fatty acids were found in Pork meat (61,9 g/100g), Lamb meat (52,67g/100g), Buffalo meat (51,93g/100g) and the less value were found in Goat meat (7,94g/100g). The bigger concentration of saturated fatty acids were found in Goat meat (41,4g/100g), Capybara meat (29,79g/100g) and the less value were found in Beef meat (1,88g/100g),

Buffalo meat (1,29g/100g). While the monounsaturated fatty acids present low variation, which was the bigger value 47,22% in Beef meat and less value was (30g/100g) on Capybara meat. The value presented by fatty acids saturated, monounsaturated and polyunsaturated are not the same presented by USDA (2002). Board and Lamb meat presented different value in saturated and monounsaturated fatty acids profile. The value presented in polyunsaturated was almost the same quoted by USDA (2002).

Table 2 – Fatty acids profile (g/ 100g de Lipids) of meats.

Fatty acids	Lamb meat	Goat meat	Capybara meat	Cateto meat	Queixada meat
Miristic acids (C14:0)	2,52 ±0,48	0,7 ±0,02	2,67 ±0,69	1,82 ±0,74	0,967 ±0,08
Palmitic acids (C16:0)	25,95 ±2,17	4,19 ±0,19	25,41 ±1,14	25 ±3,16	25,78 ±0,93
Palmitolêic acids (C16:1)	2,23 ±0,27	25 ±0,36	2,74 ±0,63	4,98 ±0,56	4,16 ±0,09
Stearic acids (C18:0)	24,2 ±2,52	3,05 ±0,04	8,71 ±1,18	11,02 ±1,84	9,73 ±2,41
Oleic acids (C18:1)	34,75 ±2,82	20,83 ±0,04	27,26 ±3,08	37,52 ±2,38	39,59 ±0,95
Linolêic acids (C18:2)	6,59 ±4,88	38,73 ±0,28	22,12 ±3,95	17,27 ±2,64	17,47 ±0,85
Linolênic acids(C18:3)	0,24 ±0,49	2,67 ±0,06	7,67 ±0,86	1,3 ±2,04	1,17 ±2,02
Others	3,05±1,31	4,72±0,23	6,48±3,35	1,46±1,41	2,32±1,11
saturated	51,62± **b**	7,94± **e**	36,8± **d**	38,97± **d**	36,46± **d**
monounsaturated	35,6± **cd**	45,93± **ab**	30,02± **d**	42,50± **b**	43,76± **ab**
polyunsaturated	10,78± **d**	41,4± **a**	29,79± **b**	19,28± **c**	17,47± **c**

Table 3 – Fatty acids profile (g/ 100g de Lipids) of meats.

Fatty acids	Boar meat	Pork meat	Beef meat	Buffalo meat
Mirístic acids (C14:0)	1,44 ±0,1	2,44 ±0,1	3,47 ±0,1	1,8 ±0,01
Palmític acids (C16:0)	25,54 ±0,51	39,18 ±1,59	25,4 ±0,69	20,1 ±0,18
Palmitolêic acids (C16:1)	2,92 ±0,19	2,18 ±0,21	3,17 ±0,2	2,44 ±0,26
Esteárico acids (C18:0)	15,05 ±1,03	20,28 ±1,19	18,55 ±0,1	30,03 ±1,99
Oléic acids (C18:1)	42,72 ±1,38	32,42 ±3,07	44,05 ±0,44	38,46 ±3,56
Linolêic acids (C18:2)	10,43 ±1,58	0	1,88 ±0,02	1,29 ±0,48
Linolênic acids(C18:3)	1,12± 0,30	0	0	0
Others	1,02±0,82	3,50±1,71	3,58±0,74	8,15±2,86
saturated	42,46± **d**	61,92± **a**	47,34± **bc**	54,78± **ab**
monounsaturated	46,40± **ab**	34,60± **cd**	47,22± **a**	40,06± **bc**
polyunsaturated	10,12± **d**	0 **e**	1,88± **e**	1,29± **e**

The results presented a significant difference, Tukey ($p<0,05$).

Conclusions

Due to the results obtained in physico-chemical composition and acids fat profile at the different meats, beef and pork meat, it will be possible update the nutritional table.

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