Beef Fat in Belted Galloways

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"Lean beef is a good source of dietary protein."

Half of us will die of coronary heart disease (CHD). Risk factors for CHD:

- **Smoking.**
- **Obesity.**
- **High blood pressure.**
- **Family history of CHD.**
- **Lack of exercise.**
- **Male gender.**
- **Diabetes.**
- **Raised blood Low Density Lipoprotein (LDL) cholesterol.**

However, raised blood High Density Lipoprotein (HDD cholesterol is beneficial. It is increased by exercise.

Atheroma is due to deposits of cholesterol in the arteries thereby narrowing or blocking the arteries. Each 1% reduction in LDL reduces CHD by 2%.

Cholesterol is manufactured in the human liver and gut and is a large component of bile, where it may form gall stones. Cholesterol is a component of muscle cell membrane so lean meat surprisingly is higher in cholesterol than fat meat.

Reducing dietary cholesterol from 450mg/day to 300mg/day will lower LDL by 2%. One egg yolk contains 250mg of cholesterol.

However as 80% of human blood cholesterol is manufactured in the liver mainly from saturated fat, meat analysis for cholesterol content is not so important, and is also very expensive.

In food it is the saturated fatty acid that raises the LDL, in particular it is the palmitic acid which is harmful. Stearic acid is a saturated fat which is high in beef but does not raise the LDL.

Mono-unsaturated fatty acids (oleic) are beneficial.

Poly-unsaturated fatty acids are very beneficial and are composed of two essential fatty acids-linoleic (omega 6) and linolenic (omega 3). These essential fatty acids are manufactured by plants - grasses, hay and flaxseed, but not by humans. They are absorbed by cattle through rumen. Linoleic acid (omega 6) lowers LDL but can cause breast, colon and prostate cancer.

Linolenic acid (omega 3) may lower LDL, is anti- thrombogenic, is cardio-protective and essential for the brain and retina. Omega 3 is converted into:

Eicosapentaenoic acid (EPA) - anti-thrombus, and
Docosahexaenic acid (DHA) - necessary for brain and retina.
Both are high in fish oils.

The important omega 6 / omega 3 ratio should be less than 10.

Beef cuts - raw, trimmed of visible fat	% Fat
Inside round steak	2.1
Sirloin steak	3.8
Rump roast	4.3
Eye of round roast	4.8
Outside round steak	5.1
Sirloin tip	5.2
Eye of round steak	5.5
Strip loin steak	5.6
Blade roast	5.7
Tenderloin	5.8
Rib eye steak	6.7
T bone	7.1
Blade steak	7.2
Brisket	7.3
Flank	7.4
Rib roast	7.5

Source: Health & Welfare Canada 1988

	Roast Chicken	Pork Loin	Salmon filet
Total fat	2.7	5.8	6.7
Saturated	0.6	2.0	1.5
Polyunsaturated	0.6	0.6	1.8
Monunsaturated	0.8	2.6	2.8

Beef meat fat study

For about 3 months January- March 1994, 5 steers and one heifer all pure-bred Belted Galloways, were fed about 8 lbs of milled mixed barley and oats along with hay ad lib. The cattle were aged 18 to 24 months old. Carcass weights were 300 to 440 lbs. Samples of meat from the inside round and rib roast were analysed by the lipid analytical laboratories of the University of Guelph and averaged. The results were fairly consistent.

In April 1994 six randomly selected non- Belted Galloway cattle, mainly cross bred Limousin, Hereford and Simmental, were similarly sampled by the same butcher and analysed for lipid content by the same laboratory. The study was blinded as the laboratory did not know the source of the samples in any of the

cases, in all cases the meat samples were raw. These cattle all came from the same feed lot and had been admitted to the feed lot at age 6 - 8 months and kept there for 10 to 12 months on a diet of 10 lbs a day of corn silage, ground corn, ground barley and soy beans. They had no hay except for the initial few weeks.

In August 1994 three yearling solid black Gallowaybulls were similarly analysed. They had been fed ground grain, mainly oats and some corn, initially 3 lbs/day working up to 9 lbs/day with hay ad lib, for 140 days. It was noted that their meat was exceptionally lean.

Conclusions

Belted Galloway meat is low in total fat and in Saturated fat, Belted Galloway meat is high in the beneficial Omega 3 fatty acid and lower in Omega 6. It has an excellent Omega 6/ Omega 3 ratio, It contains good high levels of EPA and DHA, It is more beneficial than pork loin, and about as good as roasting chicken and salmon filet.

All expressed as Gm/100Gm raw meat with exception of cholesterol								
	Belted Galloway	Random Commercial	1970 USDA	1988 H&W CAN	1988 J.Can Diet	1988 Can. Nutri. File	1989 J.Inst.Can Sci.Tech. Ag.Canada	Galloway (3 bulls) solid black
Total Fat Average	2.71	3.24	20.4	3.5	15.5	7.6	12.2	1.15
Saturated Fat	1.23	1.34	10.0	1.3	-	2.8	-	0.47
Palmitic acid (saturated)	0.68	0.76						0.28
Stearic acid (saturated)	0.46	0.45						0.16
All Polyunsaturated	0.32	0.44						0.28
Omega 6 Linoleic acid (polyunsaturated)	0.12	0.25	less than 1					0.14
Omega 3 Linolenic acid (polyunsaturated)	0.037	0.031						0.021
All Monounsaturated	1.18	1.45						0.39
Eicosapentaenoic acid, EPA	0.026	0.016						0.019
Docosahexaenoic acid, DHA	0.0032	0.0033						0.0017
Cholesterol mg/100G	49mg/ 100G single sample		70mg/ 100G	54mg/ 100G		73mg/ 100G	51mg/ 100G	

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