

# Lipid Study

Lipid Analyst Label Health Claims - Comparison Test Between High Sierra Beef (HSB) Grass-fed and Grain-fed Steers, 6/2005 – 1/2006.



## Collaborators:

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## Background, Rationale and Objectives:

There is considerable support among the dietetic community for dietary recommendations that promote reduced fat intake. A number of reports spanning three decades suggest forage-only diets can significantly alter the lipid composition of the final meat product while reducing the overall fat content. Several studies report that forage-fed meat contains higher concentrations of omega-3 fatty acids (n-3) and conjugated linoleic acid (CLA), all substances reported to have favorable effects on human health. This study was conducted to develop fatty acid profiles comparing grass-fed with grain-fed steers. This data is some of the first of its kind generated for California grass-fed cattle.

## Research Methods or Creative Activity:

- All samples were evaluated in triplicate, using both internal and external standards for 40 fatty acids. as a base protocol. The extraction, column settings and oven temperatures are exactly the same as described in the protocol developed by Realini, et al in 2004 (Meat Science 66:567-577).
- A summary table has been prepared as a preliminary report, statistical analysis was Analysis of Variance using Tukey's multiple comparisons as a mean separation. Subscripts that differ within the same row are statistically significant at the  $P < 0.01$ .

## Results:

% Fatty Acid within neutral lipid portion of the meat					
		HSB		Grain fed	
		Mean	S.E.	Mean	S.E.
%	% Lipid (Neutral)	8.6a	1.6	18.7b	1.3
%	Saturated FA	48.4	0.58	46.6	0.46
%	MonoUnsat FA	47.5a	0.43	49.3b	0.42
%	PolyUnsat FA	4.0	0.23	3.7	0.18
%	CLA	1.02a	0.03	.52b	0.023
%	Omega-6	2.8	0.2	3.4	0.16
%	Omega 3	1.13a	0.04	0.36c	0.032
	n-6:n-3 Ratio	2.5a	0.33	10.0b	0.26
%	C18:3**	0.86a	0.03	0.27c	0.022
	<b>** Precursor to Omega-3</b>				

Means with a different subscript within the same row are significantly different ( $P < 0.01$ ).

## Impacts:

- Fatty-acid profile data was developed for California grass-fed cattle
- The CLA and Omega-3 results for HSB grass-fed steers are similar to results conducted on grass-fed cattle in other parts of the United States.