Journal of Dairy Science Vol. 81 No. 5 1251-1261

Trans-Octadecenoic Acids and Milk Fat Depression in Lactating Dairy Cows

J. M. Griinari [1], D. A. Dwyer [1], M. A. McGuire [1], D. E. Bauman [1], D. L. Palmquist [2], and K.V.V. Nurmela [3]

[1] Department of Animal Science, Cornell University, Ithaca, NY 14853
[2] Department of Animal Sciences, The Ohio State University, Ohio Agricultural Research and Development Center, Wooster 44691
[3] Valio Ltd., FIN-00039 Helsinki, Finland

We examined the role of *trans*-octadecenoic acids in milk fat depression when low fiber diets were fed. The study consisted of four experimental periods with a 2 x 2 factorial arrangement of treatments to test the effects of dietary fat (saturated vs. unsaturated) and rumen fermentation (high fiber diets vs. low fiber diets) on milk fat depression. Dietary fiber concentration and type of fat had significant effects on milk fat. Effects were most pronounced when unsaturated fat was added to the low fiber diet. When the low fiber diet plus unsaturated fat was fed, milk fat percentage and yield were decreased by 30 and 35%, respectively, compared with the percentage and yield when the high fiber diet plus saturated fat was fed. Alterations in rumen fermentation caused by differences in dietary fiber concentrations had little effect on the amount of *trans*-octadecenoic acids in milk fat, and the total amount did not correlate with changes in milk fat percentage. Further examination of the isomeric profile of *trans*-octadecenoic acid revealed substantial differences among the dietary treatments. Although the addition of unsaturated fat resulted in marked increases in the milk fat content of *trans*-11-octadecenoic acid, regardless of dietary fiber concentration, the low fiber diet plus unsaturated fat increased the content of *trans*-10-octadecenoic acid. This combination was also associated with a significant decrease in milk fat content and yield. When the low fiber diets were fed, circulating insulin concentrations were elevated, regardless of the type of fat supplement. However, marked milk fat depression occurred only when the low fiber diet was supplemented with unsaturated fat.

Key Words: *trans*-octadecenoic acids • insulin • milk fat depression • fat synthesis

Submitted on May 16, 1997
Accepted on December 22, 1997

Journal of Dairy Science HOME

G. N. Gozho and T. Mutsvangwa
Influence of Carbohydrate Source on Ruminal Fermentation Characteristics, Performance, and Microbial Protein Synthesis in Dairy Cows
J Dairy Sci, July 1, 2008; 91(7): 2726 - 2735.
[Abstract] [Full Text] [PDF]

Journal of Dairy Science HOME

M. Bharathan, D. J. Schingoethe, A. R. Hippen, K. F. Kalscheur, M. L. Gibson, and K. Karges
Conjugated Linoleic Acid Increases in Milk from Cows Fed Condensed Corn Distillers Solubles and Fish Oil
J Dairy Sci, July 1, 2008; 91(7): 2796 - 2807.
[Abstract] [Full Text] [PDF]

Journal of Dairy Science HOME

S. K. Bhandari, S. Li, K. H. Ominski, K. M. Wittenberg, and J. C. Plaizier
Effects of the Chop Lengths of Alfalfa Silage and Oat Silage on Feed Intake, Milk Production, Feeding Behavior, and Rumen Fermentation of Dairy Cows
J Dairy Sci, May 1, 2008; 91(5): 1942 - 1958.
[Abstract] [Full Text] [PDF]

Journal of Dairy Science HOME

P. Gomez-Cortes, P. Frutos, A. R. Mantecon, M. Juarez, M. A. de la Fuente, and G. Hervas
Milk Production, Conjugated Linoleic Acid Content, and In Vitro Ruminal Fermentation in Response to High Levels of Soybean Oil in Dairy Ewe Diet
J Dairy Sci, April 1, 2008; 91(4): 1560 - 1569.
[Abstract] [Full Text] [PDF]

Journal of Animal Science HOME

V. R. Osborne, S. Radhakrishnan, N. E. Odongo, A. R. Hill, and B. W. McBride
Effects of supplementing fish oil in the drinking water of dairy cows on production performance and milk fatty acid composition
J Anim Sci, March 1, 2008; 86(3): 720 - 729.
[Abstract] [Full Text] [PDF]

Journal of Dairy Science HOME

A. K. G. Kadegowda, L. S. Piperova, and R. A. Erdman
Principal Component and Multivariate Analysis of Milk Long-Chain Fatty Acid Composition During Diet-Induced Milk Fat Depression
J Dairy Sci, February 1, 2008; 91(2): 749 - 759.
[Abstract] [Full Text] [PDF]

Journal of Dairy Science HOME

G. N. Gozho, M. R. Hobin, and T. Mutsvangwa
Interactions Between Barley Grain Processing and Source of Supplemental Dietary Fat on Nitrogen Metabolism and Urea-Nitrogen Recycling in Dairy Cows
J Dairy Sci, January 1, 2008; 91(1): 247 - 259.
[Abstract] [Full Text] [PDF]

Journal of Animal Science HOME

M. M. Or-Rashid, J. K. G. Kramer, M. A. Wood, and B. W. McBride
Supplemental algal meal alters the ruminal trans-18:1 fatty acid and conjugated linoleic acid composition in cattle
J Anim Sci, January 1, 2008; 86(1): 187 - 196.
[Abstract] [Full Text] [PDF]

Journal of Dairy Science HOME

W. Z. Yang, C. Benchaar, B. N. Ametaj, A. V. Chaves, M. L. He, and T. A. McAllister
Effects of Garlic and Juniper Berry Essential Oils on Ruminal Fermentation and on the Site and Extent of Digestion in Lactating Cows
J Dairy Sci, December 1, 2007; 90(12): 5671 - 5681.
[Abstract] [Full Text] [PDF]

Journal of Dairy Science HOME

N. E. Odongo, M. M. Or-Rashid, R. Bagg, G. Vessie, P. Dick, E. Kebreab, J. France, and B. W. McBride
Long-Term Effects of Feeding Monensin on Milk Fatty Acid Composition in Lactating Dairy Cows
J Dairy Sci, November 1, 2007; 90(11): 5126 - 5133.
[Abstract] [Full Text] [PDF]

Journal of Dairy Science HOME

P. J. Moate, W. Chalupa, R. C. Boston, and I. J. Lean
Milk Fatty Acids. I. Variation in the Concentration of Individual Fatty Acids in Bovine Milk
J Dairy Sci, October 1, 2007; 90(10): 4730 - 4739.
[Abstract] [Full Text] [PDF]

Journal of Dairy Science HOME

C. Cruz-Hernandez, J. K. G. Kramer, J. J. Kennelly, D. R. Glimm, B. M. Sorensen, E. K. Okine, L. A. Goonewardene, and R. J. Weselake
Evaluating the Conjugated Linoleic Acid and Trans 18:1 Isomers in Milk Fat of Dairy Cows Fed Increasing Amounts of Sunflower Oil and a Constant Level of Fish Oil
J Dairy Sci, August 1, 2007; 90(8): 3786 - 3801.
[Abstract] [Full Text] [PDF]

Journal of Dairy Science HOME

C. Silveira, M. Oba, K. A. Beauchemin, and J. Helm
Effect of Grains Differing in Expected Ruminal Fermentability on the Productivity of Lactating Dairy Cows
J Dairy Sci, June 1, 2007; 90(6): 2852 - 2859.
[Abstract] [Full Text] [PDF]

Journal of Dairy Science HOME

C. Silveira, M. Oba, W. Z. Yang, and K. A. Beauchemin
Selection of Barley Grain Affects Ruminal Fermentation, Starch Digestibility, and Productivity of Lactating Dairy Cows
J Dairy Sci, June 1, 2007; 90(6): 2860 - 2869.
[Abstract] [Full Text] [PDF]

Journal of Dairy Science HOME

N. E. Odongo, R. Bagg, G. Vessie, P. Dick, M. M. Or-Rashid, S. E. Hook, J. T. Gray, E. Kebreab, J. France, and B. W. McBride
Long-Term Effects of Feeding Monensin on Methane Production in Lactating Dairy Cows
J Dairy Sci, April 1, 2007; 90(4): 1781 - 1788.
[Abstract] [Full Text] [PDF]

Journal of Dairy Science HOME

C. D. Wildman, J. W. West, and J. K. Bernard
Effect of Dietary Cation-Anion Difference and Dietary Crude Protein on Performance of Lactating Dairy Cows During Hot Weather
J Dairy Sci, April 1, 2007; 90(4): 1842 - 1850.
[Abstract] [Full Text] [PDF]

Journal of Animal Science HOME

F. Noci, P. French, F. J. Monahan, and A. P. Moloney
The fatty acid composition of muscle fat and subcutaneous adipose tissue of grazing heifers supplemented with plant oil-enriched concentrates
J Anim Sci, April 1, 2007; 85(4): 1062 - 1073.
[Abstract] [Full Text] [PDF]

Journal of Dairy Science HOME

C. V. D. M. Ribeiro, M. L. Eastridge, J. L. Firkins, N. R. St-Pierre, and D. L. Palmquist
Kinetics of Fatty Acid Biohydrogenation In Vitro
J Dairy Sci, March 1, 2007; 90(3): 1405 - 1416.
[Abstract] [Full Text] [PDF]

Journal of Dairy Science HOME

C. Benchaar, H. V. Petit, R. Berthiaume, D. R. Ouellet, J. Chiquette, and P. Y. Chouinard
Effects of Essential Oils on Digestion, Ruminal Fermentation, Rumen Microbial Populations, Milk Production, and Milk Composition in Dairy Cows Fed Alfalfa Silage or Corn Silage
J Dairy Sci, February 1, 2007; 90(2): 886 - 897.
[Abstract] [Full Text] [PDF]

Journal of Nutrition HOME

A. L. Lock, C. Tyburczy, D. A. Dwyer, K. J. Harvatine, F. Destaillats, Z. Mouloungui, L. Candy, and D. E. Bauman
Trans-10 Octadecenoic Acid Does Not Reduce Milk Fat Synthesis in Dairy Cows
J. Nutr., January 1, 2007; 137(1): 71 - 76.
[Abstract] [Full Text] [PDF]

Journal of Dairy Science HOME

C. Benchaar, H. V. Petit, R. Berthiaume, T. D. Whyte, and P. Y. Chouinard
Effects of addition of essential oils and monensin premix on digestion, ruminal fermentation, milk production, and milk composition in dairy cows.
J Dairy Sci, November 1, 2006; 89(11): 4352 - 4364.

[Abstract] [Full Text] [PDF]

Journal of Dairy Science HOME

A. F. Brito and G. A. Broderick
Effect of varying dietary ratios of alfalfa silage to corn silage on production and nitrogen utilization in lactating dairy cows.
J Dairy Sci, October 1, 2006; 89(10): 3924 - 3938.
[Abstract] [Full Text] [PDF]

Journal of Dairy Science HOME

J. M. Moorby, R. J. Dewhurst, R. T. Evans, and J. L. Danelon
Effects of dairy cow diet forage proportion on duodenal nutrient supply and urinary purine derivative excretion.
J Dairy Sci, September 1, 2006; 89(9): 3552 - 3562.
[Abstract] [Full Text] [PDF]

Journal of Animal Science HOME

C. M. Murrieta, B. W. Hess, E. J. Scholljegerdes, T. E. Engle, K. L. Hossner, G. E. Moss, and D. C. Rule
Evaluation of milk somatic cells as a source of mRNA for study of lipogenesis in the mammary gland of lactating beef cows supplemented with dietary high-linoleate safflower seeds.
J Anim Sci, September 1, 2006; 84(9): 2399 - 2405.
[Abstract] [Full Text] [PDF]

Journal of Dairy Science HOME

B. Vlaeminck, V. Fievez, D. Demeyer, and R. J. Dewhurst
Effect of forage:concentrate ratio on fatty acid composition of rumen bacteria isolated from ruminal and duodenal digesta.
J Dairy Sci, July 1, 2006; 89(7): 2668 - 2678.
[Abstract] [Full Text] [PDF]

Journal of Dairy Science HOME

J. Pottier, M. Focant, C. Debier, G. De Buysser, C. Goffe, E. Mignolet, E. Froidmont, and Y. Larondelle
Effect of Dietary Vitamin E on Rumen Biohydrogenation Pathways and Milk Fat Depression in Dairy Cows Fed High-Fat Diets
J Dairy Sci, February 1, 2006; 89(2): 685 - 692.
[Abstract] [Full Text] [PDF]

Journal of Dairy Science HOME

K. J. Shingfield, C. K. Reynolds, G. Hervas, J. M. Griinari, A. S. Grandison, and D. E. Beever
Examination of the Persistency of Milk Fatty Acid Composition Responses to Fish Oil and Sunflower Oil in the Diet of Dairy Cows
J Dairy Sci, February 1, 2006; 89(2): 714 - 732.
[Abstract] [Full Text] [PDF]

Journal of Dairy Science HOME

J. A. Bell, J. M. Griinari, and J. J. Kennelly
Effect of Safflower Oil, Flaxseed Oil, Monensin, and Vitamin E on Concentration of Conjugated Linoleic Acid in Bovine Milk Fat
J Dairy Sci, February 1, 2006; 89(2): 733 - 748.
[Abstract] [Full Text] [PDF]

Journal of Dairy Science HOME

A. Nudda, G. Battacone, M. G. Usai, S. Fancellu, and G. Pulina
Supplementation with Extruded Linseed Cake Affects Concentrations of Conjugated Linoleic Acid and Vaccenic Acid in Goat Milk
J Dairy Sci, January 1, 2006; 89(1): 277 - 282.
[Abstract] [Full Text] [PDF]

Journal of Dairy Science HOME

S. L. Boken, C. R. Staples, L. E. Sollenberger, T. C. Jenkins, and W. W. Thatcher
Effect of Grazing and Fat Supplementation on Production and Reproduction of Holstein Cows
J Dairy Sci, December 1, 2005; 88(12): 4258 - 4272.
[Abstract] [Full Text] [PDF]

Journal of Dairy Science HOME

A. A. AbuGhazaleh, M. B. Riley, E. E. Thies, and T. C. Jenkins
Dilution Rate and pH Effects on the Conversion of Oleic Acid to Trans C18:1 Positional Isomers in Continuous Culture
J Dairy Sci, December 1, 2005; 88(12): 4334 - 4341.
[Abstract] [Full Text] [PDF]

Journal of Dairy Science HOME

J. J. Loor, A. Ferlay, A. Ollier, K. Ueda, M. Doreau, and Y. Chilliard
High-Concentrate Diets and Polyunsaturated Oils Alter Trans and Conjugated Isomers in Bovine Rumen, Blood, and Milk
J Dairy Sci, November 1, 2005; 88(11): 3986 - 3999.
[Abstract] [Full Text] [PDF]

Journal of Dairy Science HOME

C. V. D. M. Ribeiro, S. K. R. Karnati, and M. L. Eastridge
Biohydrogenation of Fatty Acids and Digestibility of Fresh Alfalfa or Alfalfa Hay Plus Sucrose in Continuous Culture
J Dairy Sci, November 1, 2005; 88(11): 4007 - 4017.
[Abstract] [Full Text] [PDF]

Journal of Dairy Science HOME

T. F. Gressley and L. E. Armentano
Effect of Abomasal Pectin Infusion on Digestion and Nitrogen Balance in Lactating Dairy Cows
J Dairy Sci, November 1, 2005; 88(11): 4028 - 4044.
[Abstract] [Full Text] [PDF]

Journal of Dairy Science HOME

C. Leonardi, S. Bertics, and L. E. Armentano
Effect of Increasing Oil from Distillers Grains or Corn Oil on Lactation Performance
J Dairy Sci, August 1, 2005; 88(8): 2820 - 2827.
[Abstract] [Full Text] [PDF]

Journal of Dairy Science HOME

A. Nudda, M. A. McGuire, G. Battacone, and G. Pulina
Seasonal Variation in Conjugated Linoleic Acid and Vaccenic Acid in Milk Fat of Sheep and its Transfer to Cheese and Ricotta
J Dairy Sci, April 1, 2005; 88(4): 1311 - 1319.
[Abstract] [Full Text] [PDF]

Journal of Dairy Science HOME

C. Leonardi, F. Giannico, and L. E. Armentano
Effect of Water Addition on Selective Consumption (Sorting) of Dry Diets by Dairy Cattle
J Dairy Sci, March 1, 2005; 88(3): 1043 - 1049.
[Abstract] [Full Text] [PDF]

Journal of Dairy Science HOME

M. P. L. Calus, M. J. Carrick, R. F. Veerkamp, and M. E. Goddard
Estimation of Genetic Parameters for Milk Fat Depression in Dairy Cattle
J Dairy Sci, March 1, 2005; 88(3): 1166 - 1177.
[Abstract] [Full Text] [PDF]

Journal of Nutrition HOME

N. K. Anderson, K. A. Beerman, M. A. McGuire, N. Dasgupta, J. M. Griinari, J. Williams, and M. K. McGuire
Dietary Fat Type Influences Total Milk Fat Content in Lean Women
J. Nutr., March 1, 2005; 135(3): 416 - 421.
[Abstract] [Full Text] [PDF]

Journal of Dairy Science HOME

J. J. Loor, A. Ferlay, A. Ollier, M. Doreau, and Y. Chilliard
Relationship Among Trans and Conjugated Fatty Acids and Bovine Milk Fat Yield Due to Dietary Concentrate and Linseed Oil
J Dairy Sci, February 1, 2005; 88(2): 726 - 740.
[Abstract] [Full Text] [PDF]

Journal of Dairy Science HOME

S. Feng, A. L. Lock, and P. C. Garnsworthy
Technical Note: A Rapid Lipid Separation Method for Determining Fatty Acid Composition of Milk
J Dairy Sci, November 1, 2004; 87(11): 3785 - 3788.
[Abstract] [Full Text] [PDF]

Journal of Dairy Science HOME

B. J. Bradford and M. S. Allen
Milk Fat Responses to a Change in Diet Fermentability Vary by Production Level in Dairy Cattle
J Dairy Sci, November 1, 2004; 87(11): 3800 - 3807.
[Abstract] [Full Text] [PDF]

Journal of Dairy Science HOME

L. S. Piperova, U. Moallem, B. B. Teter, J. Sampugna, M. P. Yurawecz, K. M. Morehouse, D. Luchini, and R. A. Erdman
Changes in Milk Fat in Response to Dietary Supplementation with Calcium Salts of Trans-18:1 or Conjugated Linoleic Fatty Acids in

Lactating Dairy Cows
J Dairy Sci, November 1, 2004; 87(11): 3836 - 3844.
[Abstract] [Full Text] [PDF]

Journal of Dairy Science HOME

X. Qiu, M. L. Eastridge, K. E. Griswold, and J. L. Firkins
Effects of Substrate, Passage Rate, and pH in Continuous Culture on Flows of Conjugated Linoleic Acid and Trans C18:1
J Dairy Sci, October 1, 2004; 87(10): 3473 - 3479.
[Full Text] [PDF]

Journal of Nutrition HOME

D. L. Palmquist, N. St-Pierre, and K. E. McClure
Tissue Fatty Acid Profiles Can Be Used to Quantify Endogenous Rumenic Acid Synthesis in Lambs
J. Nutr., September 1, 2004; 134(9): 2407 - 2414.
[Abstract] [Full Text] [PDF]

Journal of Dairy Science HOME

J. J. Loor, K. Ueda, A. Ferlay, Y. Chilliard, and M. Doreau
Biohydrogenation, Duodenal Flow, and Intestinal Digestibility of Trans Fatty Acids and Conjugated Linoleic Acids in Response to Dietary Forage:Concentrate Ratio and Linseed Oil in Dairy Cows
J Dairy Sci, August 1, 2004; 87(8): 2472 - 2485.
[Abstract] [Full Text] [PDF]

The American Journal of CLINICAL NUTRITION HOME

J. K. Kramer, C. Cruz-Hernandez, Z. Deng, J. Zhou, G. Jahreis, and M. E. Dugan
Analysis of conjugated linoleic acid and trans 18:1 isomers in synthetic and animal products
Am. J. Clinical Nutrition, June 1, 2004; 79(6): 1137S - 1145S.
[Abstract] [Full Text] [PDF]

JOURNAL OF LIPID RESEARCH HOME

G. C. Burdge, B. Lupoli, J. J. Russell, S. Tricon, S. Kew, T. Banerjee, K. J. Shingfield, D. E. Beever, R. F. Grimble, C. M. Williams, *et al.*
Incorporation of cis-9,trans-11 or trans-10,cis-12 conjugated linoleic acid into plasma and cellular lipids in healthy men
J. Lipid Res., April 1, 2004; 45(4): 736 - 741.
[Abstract] [Full Text] [PDF]

Journal of Dairy Science HOME

F. P. Lundy III, E. Block, W. C. Bridges Jr., J. A. Bertrand, and T. C. Jenkins
Ruminal Biohydrogenation in Holstein Cows Fed Soybean Fatty Acids as Amides or Calcium Salts
J Dairy Sci, April 1, 2004; 87(4): 1038 - 1046.
[Abstract] [Full Text] [PDF]

Journal of Dairy Science HOME

S. G. Onetti, S. M. Reynal, and R. R. Grummer
Effect of Alfalfa Forage Preservation Method and Particle Length on Performance of Dairy Cows Fed Corn Silage-Based Diets and Tallow
J Dairy Sci, March 1, 2004; 87(3): 652 - 664.
[Abstract] [Full Text] [PDF]

Journal of Dairy Science HOME

K. T. Selberg, A. C. Lowe, C. R. Staples, N. D. Luchini, and L. Badinga
Production and Metabolic Responses of Periparturient Holstein Cows to Dietary Conjugated Linoleic Acid and trans-Octadecenoic Acids
J Dairy Sci, January 1, 2004; 87(1): 158 - 168.
[Abstract] [Full Text] [PDF]

Journal of Animal Science HOME

J.-S. Eun, V. Fellner, J. C. Burns, and M. L. Gumpertz
Fermentation of eastern gamagrass (Tripsacum dactyloides [L.] L.) by mixed cultures of ruminal microorganisms with or without supplemental corn
J Anim Sci, January 1, 2004; 82(1): 170 - 178.
[Abstract] [Full Text] [PDF]

Journal of Dairy Science HOME

C. Leonardi, M. Stevenson, and L. E. Armentano
Effect of Two Levels of Crude Protein and Methionine Supplementation on Performance of Dairy Cows
J Dairy Sci, December 1, 2003; 86(12): 4033 - 4042.
[Abstract] [Full Text] [PDF]

Journal of Dairy Science HOME

A. Troegeler-Meynadier, M. C. Nicot, C. Bayourthe, R. Moncoulon, and F. Enjalbert
Effects of pH and Concentrations of Linoleic and Linolenic Acids on Extent and Intermediates of Ruminal Biohydrogenation in Vitro
J Dairy Sci, December 1, 2003; 86(12): 4054 - 4063.
[Abstract] [Full Text] [PDF]

Journal of Dairy Science HOME

J. M. Calberry, J. C. Plaizier, M. S. Einarson, and B. W. McBride
Effects of Replacing Chopped Alfalfa Hay with Alfalfa Silage in a Total Mixed Ration on Production and Rumen Conditions of Lactating Dairy Cows
J Dairy Sci, November 1, 2003; 86(11): 3611 - 3619.
[Abstract] [Full Text] [PDF]

Journal of Dairy Science HOME

S. Viswanadha, J. G. Giesy, T. W. Hanson, and M. A. McGuire
Dose Response of Milk Fat to Intravenous Administration of the trans-10, cis-12 Isomer of Conjugated Linoleic Acid
J Dairy Sci, October 1, 2003; 86(10): 3229 - 3236.
[Abstract] [Full Text] [PDF]

Journal of Dairy Science HOME

S. G. Onetti, R. D. Shaver, S. J. Bertics, and R. R. Grummer
Influence of Corn Silage Particle Length on the Performance of Lactating Dairy Cows Fed Supplemental Tallow
J Dairy Sci, September 1, 2003; 86(9): 2949 - 2957.
[Abstract] [Full Text] [PDF]

Journal of Dairy Science HOME

L. A. Whitlock, D. J. Schingoethe, A. R. Hippen, K.F. Kalscheur, and A.A. AbuGhazaleh
Milk Production and Composition from Cows Fed High Oil or Conventional Corn at Two Forage Concentrations
J Dairy Sci, July 1, 2003; 86(7): 2428 - 2437.
[Abstract] [Full Text] [PDF]

Journal of Dairy Science HOME

J. J. Loor and J. H. Herbein
Reduced Fatty Acid Synthesis and Desaturation Due to Exogenous trans10, cis12-CLA in Cows Fed Oleic or Linoleic Oil
J Dairy Sci, April 1, 2003; 86(4): 1354 - 1369.
[Abstract] [Full Text] [PDF]

Journal of Dairy Science HOME

L. D. Ruppert, J. K. Drackley, D. R. Bremmer, and J. H. Clark
Effects of Tallow in Diets Based on Corn Silage or Alfalfa Silage on Digestion and Nutrient Use by Lactating Dairy Cows
J Dairy Sci, February 1, 2003; 86(2): 593 - 609.
[Abstract] [Full Text] [PDF]

Journal of Dairy Science HOME

T. C. Jenkins, V. Fellner, and R. K. McGuffey
Monensin by Fat Interactions on Trans Fatty Acids in Cultures of Mixed Ruminal Microorganisms Grown in Continuous Fermentors Fed Corn or Barley
J Dairy Sci, January 1, 2003; 86(1): 324 - 330.
[Abstract] [Full Text] [PDF]

Journal of Animal Science HOME

S. K. Duckett, J. G. Andrae, and F. N. Owens
Effect of high-oil corn or added corn oil on ruminal biohydrogenation of fatty acids and conjugated linoleic acid formation in beef steers fed finishing diets
J Anim Sci, December 1, 2002; 80(12): 3353 - 3360.
[Abstract] [Full Text] [PDF]

Journal of Dairy Science HOME

I. R. Ipharraguerre, R. R. Ipharraguerre, and J. H. Clark
Performance of Lactating Dairy Cows Fed Varying Amounts of Soyhulls as a Replacement for Corn Grain
J Dairy Sci, November 1, 2002; 85(11): 2905 - 2912.
[Abstract] [Full Text] [PDF]

Journal of Dairy Science HOME

B. C. McKusick, D. L. Thomas, J. E. Romero, and P. G. Marnet
Effect of Weaning System on Milk Composition and Distribution of Milk Fat within the Udder of East Friesian Dairy Ewes
J Dairy Sci, October 1, 2002; 85(10): 2521 - 2528.
[Abstract] [Full Text] [PDF]

diabetes HOME

H. M. Roche, E. Noone, C. Sewter, S. Mc Bennett, D. Savage, M. J. Gibney, S. O'Rahilly, and A. J. Vidal-Puig
Isomer-Dependent Metabolic Effects of Conjugated Linoleic Acid: Insights From Molecular Markers Sterol Regulatory Element-Binding Protein-1c and LXR{alpha}
Diabetes, July 1, 2002; 51(7): 2037 - 2044.
[Abstract] [Full Text] [PDF]

Journal of Nutrition HOME

L. S. Piperova, J. Sampugna, B. B. Teter, K. F. Kalscheur, M. P. Yurawecz, Y. Ku, K. M. Morehouse, and R. A. Erdman
Duodenal and Milk Trans Octadecenoic Acid and Conjugated Linoleic Acid (CLA) Isomers Indicate that Postabsorptive Synthesis Is the Predominant Source of cis-9-Containing CLA in Lactating Dairy Cows
J. Nutr., June 1, 2002; 132(6): 1235 - 1241.
[Abstract] [Full Text] [PDF]

JOURNAL OF LIPID RESEARCH HOME

E. E. Mosley, G. L. Powell, M. B. Riley, and T. C. Jenkins
Microbial biohydrogenation of oleic acid to trans isomers in vitro
J. Lipid Res., February 1, 2002; 43(2): 290 - 296.
[Abstract] [Full Text] [PDF]

Journal of Nutrition HOME

L. H. Baumgard, J. K. Sangster, and D. E. Bauman
Milk Fat Synthesis in Dairy Cows Is Progressively Reduced by Increasing Supplemental Amounts of trans-10, cis-12 Conjugated Linoleic Acid (CLA)
J. Nutr., June 1, 2001; 131(6): 1764 - 1769.
[Abstract] [Full Text]

Journal of Nutrition HOME

K. L. Ritzenthaler, M. K. McGuire, R. Falen, T. D. Shultz, N. Dasgupta, and M. A. McGuire
Estimation of Conjugated Linoleic Acid Intake by Written Dietary Assessment Methodologies Underestimates Actual Intake Evaluated by Food Duplicate Methodology
J. Nutr., May 1, 2001; 131(5): 1548 - 1554.
[Abstract] [Full Text]

Journal of Nutrition HOME

L. S. Piperova, B. B. Teter, I. Bruckental, J. Sampugna, S. E. Mills, M. P. Yurawecz, J. Fritsche, K. Ku, and R. A. Erdman
Mammary Lipogenic Enzyme Activity, trans Fatty Acids and Conjugated Linoleic Acids Are Altered in Lactating Dairy Cows Fed a Milk Fat-Depressing Diet
J. Nutr., October 1, 2000; 130(10): 2568 - 2574.

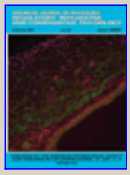
[Abstract] [Full Text]

Journal of Nutrition HOME

J. M. Griinari, B. A. Corl, S. H. Lacy, P. Y. Chouinard, K. V. V. Nurmela, and D. E. Bauman
Conjugated Linoleic Acid Is Synthesized Endogenously in Lactating Dairy Cows by {Delta}9-Desaturase
J. Nutr., September 1, 2000; 130(9): 2285 - 2291.
[Abstract] [Full Text]

EXPERIMENTAL BIOLOGY AND MEDICINE HOME

M. W. Pariza, Y. Park, and M. E. Cook
Mechanisms of Action of Conjugated Linoleic Acid: Evidence and Speculation
Experimental Biology and Medicine, January 1, 2000; 223(1): 8 - 13.
[Abstract] [Full Text]



Am. J. Physiol: Regulatory, Integrative and Comparative Physiology HOME

L. H. Baumgard, B. A. Corl, D. A. Dwyer, A. Saebo, and D. E. Bauman
Identification of the conjugated linoleic acid isomer that inhibits milk fat synthesis
Am J Physiol Regulatory Integrative Comp Physiol, January 1, 2000; 278 (1): R179 - R184.
[Abstract] [Full Text] [PDF]

Journal of Nutrition HOME

J. E. Santora, D. L. Palmquist, and K. L. Roehrig
Trans-Vaccenic Acid Is Desaturated to Conjugated Linoleic Acid in Mice
J. Nutr., January 1, 2000; 130(2): 208 - 215.
[Abstract] [Full Text]

Journal of Nutrition HOME

S. T. Franklin, K. R. Martin, R. J. Baer, D. J. Schingoethe, and A. R. Hippen
Dietary Marine Algae (Schizochytrium sp.) Increases Concentrations of Conjugated Linoleic, Docosahexaenoic and Transvaccenic Acids in Milk of Dairy Cows
J. Nutr., November 1, 1999; 129(11): 2048 - 2054.
[Abstract] [Full Text]

Journal of Nutrition HOME

P. Y. Chouinard, L. Corneau, D. M. Barbano, L. E. Metzger, and D. E. Bauman
Conjugated Linoleic Acids Alter Milk Fatty Acid Composition and Inhibit Milk Fat Secretion in Dairy Cows
J. Nutr., August 1, 1999; 129(8): 1579 - 1584.
[Abstract] [Full Text]
