TD.88137

Adjusted Calories Diet (42% from fat)

25 Years

harlan®

Celebrating 25 Years as a Staple of Atherosclerosis Research

In 1988, Dr. Ron Rose, nutritionist with Teklad Diets, collaborated with researchers at Rockefeller University to develop a diet with features of a “Western Diet” to characterize and enhance atherosclerosis development in their newly generated *Apoe* deficient mouse model. With over 200 unique users worldwide, TD.88137 continues to be fed to genetically modified cardiovascular models to accelerate and enhance hypercholesterolemia and plaque formation.

Critical dietary features of TD.88137 related to atherosclerosis development include:

- Cholesterol (0.2% total cholesterol)
- Total fat (21% by weight; 42% kcal from fat)
- High in saturated fatty acids (>60% of total fatty acids)
- High sucrose (34% by weight)

Formula	**g/kg**
Casein	195.0
DL-Methionine	3.0
Sucrose	341.46
Corn Starch	150.0
Andydrous Milkfat	210.0
Cholesterol	1.5
Cellulose	50.0
Mineral Mix, AIN-76 (170915)	35.0
Calcium Carbonate	4.0
Vitamin Mix, Teklad (40060)	10.0
Ethoxyquin	0.04

Selected Nutrient Information[1]

	% by weight	% kcal from
Protein	17.3	15.2
Carbohydrate	48.5	42.7
Fat	21.2	42.0

kcal/g	4.5
Cholesterol[2]	0.2%

[1] values are calculated from ingredient analysis or manufacturer data

[2] 0.15% added, 0.05% from fat source

Teklad diets are designed & manufactured for research purposes only

Key Points From the Literature

TD.88137 has been used to accelerate atherosclerosis development in *Apoe* and *Ldlr* deficient models:

- In *Apoe* deficient mice, plasma cholesterol triples to >1500 mg/dL within 3 weeks [1, 2]. Foam cell and lesion development occurs within 6–10 weeks [2–4]. Fibrous plaque formation is observed at 15 weeks with the development of fibrous caps after 20 weeks [2].
- *Ldlr* deficient mice fed for 2 weeks increase plasma cholesterol to >800 mg/dL and triglyceride to >300 mg/dL [5]. After six weeks of feeding, hyperglycemia, hyperinsulinemia and dyslipidemia develop with small foam cell lesions in the aortic arch [6, 7].

Typical Fatty Acid Profile of TD.88137

Typical Fatty Acid Analysis, % of diet[1]	Mean	SD
Total	20.7	1.5
Saturated fat	12.8	0.8
Monounsaturated fat	5.6	0.5
Polyunsaturated fat	1.0	0.2
Unknown[2]	1.3	0.3

Typical Fatty Acid Profile, % of total fatty acids[1]	Mean	SD
Saturated fat	61.8	2.0
Monounsaturated fat	27.3	2.1
Polyunsaturated fat	4.7	0.8
4:0	2.1	1.1
6:0	1.5	0.7
8:0	1.1	0.3
10:0	2.6	0.5
12:0	3.3	0.5
14:0	10.6	0.9
16:0	28.9	1.3
16:1	1.5	0.2
18:0	12.5	0.8
18:1 (Oleic)	20.9	2.6
18:1 Isomers[3]	4.0	1.2
18:2 (Linoleic)	2.3	1.0
18:2 Isomers[4]	1.3	0.5
18:3 (Linolenic)	0.7	0.2

[1] n = 21, analysis conducted by two independent laboratories.

[2] Unidentified fatty acids and those contributing on average less than 0.5% of total fatty acids.

[3] Includes trans isomers elaidic and vaccenic acid and unidentified cis isomers.

[4] Includes trans isomers.

For further information about TD.88137, or if you are interested in learning more about other atherogenic or high fat diets contact us at:
askanutritionist@harlan.com

Control Diet Options for TD.88137

Natural ingredient diets

- Also referred to as standard diets or chow
- These diets differ in the source and level of nutrients as well as the presence of non-nutritive factors (such as phytates or phytoestrogens) compared to TD.88137
- Limits inferences to differences in dietary pattern versus a specific dietary component

Ingredient matched, low fat diets

- Controls for the type of ingredients, non-nutritive components and the source and level of specific nutrients
- Suggested ingredient matched, low fat dietary controls for TD.88137 are listed below. Datasheets can be found on our website at www.harlan.com

Suggested ingredient matched, low fat controls

Diet	kcal/g	Fat, % by weight	% kcal from fat	Fat sources, % by weight	Sucrose, % by weight
TD.05230	3.7	5.2	12.6	3.7% milk fat, 1.3% soybean oil	34.1
TD.08485	3.6	5.2	13.0	3.7% milk fat, 1.3% soybean oil	12.0

Additional controls are available. Contact us at askanutritionist@harlan.com

With over 420 citations, uses of TD.88137 continue to evolve and include atherosclerosis, obesity, osteoporosis, hypertension and metabolic syndrome. Contact us for a more extensive reference list.

1. Plump, A.S., et al., Severe hypercholesterolemia and atherosclerosis in apolipoprotein E-deficient mice created by homologous recombination in ES cells. Cell, 1992. 71(2): p. 343-53.
2. Nakashima, Y., et al., ApoE-deficient mice develop lesions of all phases of atherosclerosis throughout the arterial tree. Arterioscler Thromb, 1994. 14(1): p. 133-40.
3. Febbraio, M., et al., Targeted disruption of the class B scavenger receptor CD36 protects against atherosclerotic lesion development in mice. J Clin Invest, 2000. 105(8): p. 1049-56.
4. Nakashima, Y., et al., Upregulation of VCAM-1 and ICAM-1 at atherosclerosis-prone sites on the endothelium in the ApoE-deficient mouse. Arterioscler Thromb Vasc Biol, 1998. 18(5): p. 842-51.
5. Towler, D.A., et al., Diet-induced diabetes activates an osteogenic gene regulatory program in the aortas of low density lipoprotein receptor-deficient mice. J Biol Chem, 1998. 273(46): p. 30427-34.
6. Tsuchiya, K., et al., FoxOs integrate pleiotropic actions of insulin in vascular endothelium to protect mice from atherosclerosis. Cell Metab, 2012. 15(3): p. 372-81.
7. Huszar, D., et al., Increased LDL cholesterol and atherosclerosis in LDL receptor-deficient mice with attenuated expression of scavenger receptor B1. Arterioscler Thromb Vasc Biol, 2000. 20(4): p. 1068-73.
8. Yang, B., et al., Changes of skeletal muscle adiponectin content in diet-induced insulin resistant rats. Biochem Biophys Res Commun, 2006. 341(1): p. 209-17.
9. Schafer, K., et al., Leptin promotes vascular remodeling and neointimal growth in mice. Arterioscler Thromb Vasc Biol, 2004. 24(1): p. 112-7.
10. Lijnen, H.R., et al., Nutritionally induced obesity is attenuated in transgenic mice overexpressing plasminogen activator inhibitor-1. Arterioscler Thromb Vasc Biol, 2003. 23(1): p. 78-84.
11. Maquoi, E., et al., Modulation of adipose tissue expression of murine matrix metalloproteinases and their tissue inhibitors with obesity. Diabetes, 2002. 51(4): p. 1093-101.

Key Planning Information:

- Store diet refrigerated and plan to use within six months. Diet should be replaced at minimum once per week when feed on cage tops.
- Available as a soft ½" pellet or as a crumbly powder.
- 3 kg minimum order quantity. For planning purposes, estimates for diet uses (including feed intake and diet waste) are 5 g of diet per mouse and 30 g of diet per rat per day.
- Two day lead time for orders less than 10 kg. Two week lead time for larger quantity orders.
- Lead time for irradiation adds two weeks for any quanitity of diet and must be requested at the time you place your order. Changes in texture and browning may occur with irradiation.
- Shipping can affect pellet quality. Soft vacuum packaging can offer protection of the pellets during shipping. Two day shipping is recommended during warmer months.
- Contact us to place an order, obtain pricing or check your order status at:

1.800.483.5523

tekladinfo@harlan.com

harlan®
Helping you do research better