COVANCE

Report Number:	**643921-0**
Report Date:	**03-Oct-2012**
Report Status:	**Final**

Certificate of Analysis

National Institutes of Health

BLDG 14A, RM 119A8
14 Service Rd West
Bethesda Maryland 20892-5515 United States

Sample Name:	**Rodent Diet**	**Covance Sample:**	**1629851**
Project ID	NAT_INST-20120926-0050	**Receipt Date**	24-Sep-2012
PO Number	Req #2820639 / Charge - Visa	**Receipt Condition**	Ambient temperature
Sample Serving Size		**Login Date**	26-Sep-2012
Description	NIH37Z-1130-080712	**Storage Condition**	-20 (+/- 10) Degrees Celsius

Analysis	**Result**
Fatty Acids calculated as Triglycerides	
8:0 Caprylic	<0.005 %
10:0 Capric	<0.005 %
12:0 Lauric	<0.005 %
14:0 Myristic	0.082 %
14:1 Myristoleic	<0.005 %
15:0 Pentadecanoic	0.010 %
15:1 Pentadecenoic	<0.005 %
16:0 Palmitic	1.13 %
16:1 Palmitoleic	0.110 %
17:0 Heptadecanoic	0.015 %
17:1 Heptadecenoic	<0.005 %
18:0 Stearic	0.258 %
18:1 Oleic	1.54 %
Total 18:1 Isomers	1.66 %
18:2 Linoleic	3.47 %
18:3 Gamma Linolenic	<0.005 %
18:3 Linolenic	0.367 %
18:4 Octadecatetraenoic	0.019 %
20:0 Arachidic	0.024 %
20:1 Eicosenoic	0.032 %
20:2 Eicosadienoic	<0.005 %
20:4 Arachidonic	0.013 %
20:3 Eicosatrienoic	<0.005 %
20:5 Eicosapentaenoic	0.108 %
22:0 Behenic	0.018 %
22:1 Erucic	<0.005 %
22:5 Docosapentaenoic	0.016 %
24:0 Lignoceric	0.012 %
22:6 Docosahexaenoic	0.131 %
Saturated Fat	1.48 %
Monounsaturated Fat, Cis and Trans Isomers	1.72 %
Polyunsaturated Fat, Cis and Trans Isomers	3.95 %
Omega 3 Fatty Acids	0.640 %

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Description	NIH37Z-1130-080712	**Storage Condition**	-20 (+/- 10) Degrees Celsius

Analysis	**Result**
Fatty Acids calculated as Triglycerides	
Omega 6 Fatty Acids	3.48 %
Sum of Fatty Acids	7.47 %

Method References	**Testing Location**
Fatty Acids calculated as Triglycerides (FALC_S:12)	**Covance Laboratories - Madison**

Official Methods and Recommended Practices of the AOCS, Official methods Ce 2-66 (2009), Ce 1b-89 (2009), Ce 2b-11 (2011), and Ce 1i-07 (2009), The American Oil Chemists' Society, Champaign, IL (modified).

Testing Location(s)	**Released on Behalf of Covance by**
Covance Laboratories - Madison	**Lori Ross - Associate Director**

3301 Kinsman Blvd
Madison WI 53704
608-242-2712 x4170

These results apply only to the items tested. This certificate of analysis shall not be reproduced, except in its entirety, without the written approval of Covance.

NIH SPECIFICATION

Open Formula Rat and Mouse Ration - 6.5%
Crude Fat Autoclavable (NIH-37)

Ingredients	Percentage by Weight
Fish meal (60% protein)	9.0
Soybean meal (48.5% protein)	5.0
Alfalfa meal (17% protein)	2.0
Corn gluten meal (60% protein)	2.0
Ground whole hard wheat	35.37
Ground #2 yellow corn	21.0
Ground whole oats	10.0
Wheat middlings	7.95
(continued on next page)	
Brewers dried yeast	1.0
Soy oil	5.0
Salt	.5
Dicalcium phosphate	1.5
Ground limestone	.5
Premixes	.5
Choline-CL-70	.13
	100.00

Vitamin Fortification per ton (2,000 lbs) of Finished Product.

Vitamin	Amount	Source
A	22,000,000 IU	Vitamin A Palmitate or Acetate
D_3	3,800,000 IU	D activated animal sterol
K	20 g.	Menadione activity
dl alpha-tocopheryl Acetate	15 g.	
Choline	700 g.	Choline Chloride
Folic Acid	1 g.	
Niacin	40 g.	
d Pantothenic Acid	25 g.	d-Calcium Pantothenate
Riboflavin supplement	5 g.	
Thiamin	65 g.	Thiamin mono nitrate

(Continued on next page)

B_{12} supplement	40,000 mcg.	
Pyridoxine	5 g.	Pyridoxine

		hydrochloride
Biotin	120 mg.	d-Biotin

Mineral Fortification per ton (2,000 lbs.) of Finished Product

Mineral	Amount	Source
Cobalt	400 mg.	Cobalt carbonate
Copper	4 g.	Copper sulfate
Iron	60 g.	Iron sulfate
Magnesium	400 g.	Magnesium oxide
Manganese	100 g.	Manganese oxide
Zinc	10 g.	Zinc oxide
Iodine	1500 mg.	Calcium iodate

Micro Analysis - The total calculated concentrations of nutrients in the ration from ingredients and from the fortifications at the time of manufacture should be as follows:

Crude protein	%	Minimum	18.0
Crude fat	%	Minimum	6.5
Crude fiber	%	Maximum	4.0
Ash	%	Maximum	7.0

Amino Acids (% of total diet)	Minimum
Arginine	.90
Lysine	.85
Methionine	.35
Cystine	.25
Tryptophan	.20
Glycine	.95
Histidine	.38
Leucine	1.40
Isoleucine	.95
Phenylalanine	.85
Tyrosine	.60
Threonine	.65
Valine	.90

Minerals		Minimum
Calcium	%	1.10
Phosphorous	%	.90
Potassium	%	.55
Sodium	%	.30
Magnesium	%	.18
Iron	PPM	190.00
Zinc	PPM	50.00
Manganese	PPM	140.00
Copper	PPM	11.00
Cobalt	PPM	0.70
Iodine	PPM	1.80

Vitamins		Minimum
Vitamins A	IU/g	20.0 (10)*

Vitamin D	IU/g	4.0
Alpha-tocopherol	PPM	45.0
Thiamin	PPM	75.0
Riboflavin	PPM	7.0
Niacin	PPM	80.0
Pantothenic Acid	PPM	36.0
Choline	PPM	1900.0
Pyridoxine	PPM	10.0
Folic Acid	PPM	2.0
Biotin	PPM	.2
Vitamin B_{12}	mcg/kg	50.0
Vitamin K	PPM	20.0

* TRUE VITAMIN A ACTIVITY BY HPLC METHOD