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the Impact of Substituting MON 87705 for
Liquid Soybean Oil in Four Food
Categories

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*Center for Chemical Regulation and Food
Safety*

**Estimated Daily Intake of
Fatty Acids and the Impact of
Substituting MON 87705 for
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Food Categories**

Estimated Daily Intake of Fatty Acids and the Impact of Substituting MON 87705 for Liquid Soybean Oil in Four Food Categories

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Contents

	<u>Page</u>
List of Tables	iv
LIST OF ACRONYMS	vi
1 EXECUTIVE SUMMARY	7
2 INTRODUCTION	9
3 DATA AND METHODS	10
3.1 Food Intake and Nutrient Composition – NHANES 2003-2006	10
3.2 Target Foods	11
3.3 Fatty Acid Profiles	11
3.3.1 Baseline	11
3.3.2 Fatty Acid Profile for MON 87705	13
3.4 Nutrient Intake Estimation Procedures	15
4 RESULTS	16
4.1 Baseline: Estimated Daily Intakes of Total Fat and selected Fatty Acids from Target Soybean Oil Component of the Targeted Foods	16
4.2 Replacement: Estimated Daily Intakes of Total Fat and Selected Fatty Acids from MON 87705 Oil Component of the Targeted Foods	16
4.2.1 Impact of Replacement on the Target Oil Portion of Target Foods	17
4.3 Estimated Daily Intake of Total Fat and Selected Fatty Acids from Target Foods	18
4.4 Current Daily Intake of Total Fat and Five Fatty Acids from All Foods	19
4.5 Impact of Replacement on Total Daily Intake of Fatty Acids	19
5 CONCLUSIONS	21
6 REFERENCES	23
Appendix A. Baseline Fatty Acid Profiles for the Soybean Oil Components of Target Food Groups	48
Appendix B. Foods Targeted for Replacement	51

List of Tables

	<u>Page</u>
Table 1. Target foods and baseline fatty acid profiles (% of Fat)	13
Table 2. Fatty Acid Profile for MON 87705 and MON 87705 Blend (g/100 g fat)	14
Table 3-A. BASELINE – <i>Per Capita</i> Intakes of Fatty Acids from Soybean Oil Component in Target Foods (g/day)	24
Table 3-B. BASELINE -- <i>Per Capita</i> Intakes of Fatty Acids from Soybean Oil Component in Target Foods (% Energy)	25
Table 4-A. BASELINE -- <i>Per User</i> Intakes of Fatty Acids from Soybean Oil Component in Target Foods (g/day)	26
Table 4-B. BASELINE -- <i>Per User</i> Intakes of Fatty Acids from Soybean Oil Component in Target Foods (% Energy)	27
Table 5-A. <i>Per Capita</i> Intakes of Fatty Acids from MON 87705 after Replacement of Liquid Soybean Oil in Target Foods (g/day)	28
Table 5-B. <i>Per Capita</i> Intakes of Fatty Acids from MON 87705 after Replacement of Liquid Soybean Oil in Target Foods (% Energy)	29
Table 6-A. <i>Per User</i> Intakes of Fatty Acids from MON 87705 after Replacement of Liquid Soybean Oil in Target Foods (g/day)	30
Table 6-B. <i>Per User</i> Intakes of Fatty Acids from MON 87705 after Replacement of Liquid Soybean Oil in Target Foods (% Energy)	31
Table 7-A. Mean <i>Per Capita</i> Fatty Acid Intake from Soybean Oil Component in Target Foods Pre- and Post- MON 87705 Soybean Oil Replacement, U.S Population	32
Table 7-B. 90 th Percentile <i>Per User</i> Fatty Acid Intake from Soybean Oil Component in Target Foods Pre- and Post- MON 87705 Soybean Oil Replacement, U.S Population	32
Table 7-C. Changes in Fatty Acids Intake from Soybean Oil Component in Four Target Food Groups, U.S Population (g/day)	33
Table 8-A. Target Foods: Current daily intake of total fat and five fatty acids (palmitic, stearic, oleic, linoleic, and linolenic), <i>per capita</i> mean and 90 th percentile, US population (g/day)	34
Table 8-B. Target Foods: Current daily intake of total fat and five fatty acids (palmitic, stearic, oleic, linoleic, and linolenic), <i>per capita</i> mean and 90 th percentile US Males (g/day)	34
Table 8-C. Target Foods: Current daily intake of total fat and five fatty acids (palmitic, stearic, oleic, linoleic, and linolenic), <i>per capita</i> mean and 90 th percentile US Females (g/day)	35
Table 8-D. Target Foods: Current daily intake of total fat and five fatty acids (palmitic, stearic, oleic, linoleic, and linolenic), <i>per user</i> mean and 90 th percentile, US population (g/day)	35
Table 8-E. Target Foods: Current daily intake of total fat and five fatty acids (palmitic, stearic, oleic, linoleic, and linolenic), <i>per user</i> mean and 90 th percentile, US Males (g/day)	36
Table 8-F. Target Foods: Current daily intake of total fat and five fatty acids (palmitic,	

stearic, oleic, linoleic, and linolenic), <i>per user</i> mean and 90 th percentile, US Females (g/day)	36
Table 9-A. Target Foods: Current daily intake of total fat and five fatty acids (palmitic, stearic, oleic, linoleic, and linolenic), mean <i>per capita</i> and 90 th percentile, US population (% Energy)	37
Table 9-B. Target Foods: Current daily intake of total fat and five fatty acids (palmitic, stearic, oleic, linoleic, and linolenic), mean <i>per capita</i> and 90 th percentile, US Males (% Energy)	37
Table 9-C. Target Foods: Current daily intake of total fat and five fatty acids (palmitic, stearic, oleic, linoleic, and linolenic), mean <i>per capita</i> and 90 th percentile, US Females (% Energy)	38
Table 9-D. Target Foods: Current daily intake of total fat and five fatty acids (palmitic, stearic, oleic, linoleic, and linolenic), mean <i>per user</i> and 90 th percentile, US population (% Energy)	38
Table 9-E. Target Foods: Current daily intake of total fat and five fatty acids (palmitic, stearic, oleic, linoleic, and linolenic), <i>per user</i> mean and 90 th percentile, US Males (% Energy)	39
Table 9-F. Target Foods: Current daily intake of total fat and five fatty acids (palmitic, stearic, oleic, linoleic, and linolenic), <i>per user</i> mean and 90 th percentile, US Females (% Energy)	39
Table 10-A. Total Diet: Current daily intake of total fat and five fatty acids (palmitic, stearic, oleic, linoleic, and linolenic), US population (g/day)	40
Table 10-B. Total Diet: Current <i>per capita</i> daily intake of total fat and five fatty acids (palmitic, stearic, oleic, linoleic and linolenic), US Males (g/day)	40
Table 10-C. Total Diet: Current <i>per capita</i> daily intake of total fat and five fatty acids (palmitic, stearic, oleic, linoleic and linolenic), US Females (g/day)	41
Table 11-A. Total Diet: Current <i>per capita</i> daily intake of total fat and five fatty acids (palmitic, stearic, oleic, linoleic, and linolenic), US population (% Energy)	41
Table 11-B. Total Diet: Current <i>per capita</i> daily intake of total fat and five fatty acids (palmitic, stearic, oleic, linoleic and linolenic), US Males (% Energy)	42
Table 11-C. Total Diet: Current <i>per capita</i> daily intake of total fat and five fatty acids (palmitic, stearic, oleic, linoleic and linolenic), US Females (% Energy)	42
Table 12-A. Fatty Acid Intake from Total Diet, Pre and Post MON 87705, US population (g/day)	43
Table 12-B. Fatty Acid Intake from Total Diet, Pre and Post MON 87705, US Population (% Energy)	43
Table 13- A. Mean <i>Per Capita</i> Fatty Acid Intake from Total Diet, Pre and Post MON 87705 Replacement, US Males	44
Table 13-B. Mean <i>Per Capita</i> Fatty Acid Intake from Total Diet, Pre and Post MON 87705 Replacement, US Females	45
Table 14-A. 90th Percentile <i>Per User</i> Fatty Acid Intake from Total Diet, Pre and Post MON 87705 Replacement, US Males	46
Table 14-B. 90th Percentile <i>Per User</i> Fatty Acid Intake from Total Diet, Pre and Post MON 87705 Replacement, US Females	47

LIST OF ACRONYMS

CSFII	Continuing Survey of Food Intakes by Individuals
EDI	Estimated Daily Intake
FA	Fatty Acids
FARE™	Foods Analysis and Residue Evaluation Program
FDA	Food and Drug Administration
FNDDS	Food and Nutrient Database for Dietary Studies
NCHS	National Center for Health Statistics
NDB	Nutrient Database
NHANES	National Health and Nutrition Examination Survey
PH	Partially Hydrogenated
SR	Standard Reference
USDA	U.S. Department of Agriculture

1 EXECUTIVE SUMMARY

An intake assessment was conducted to evaluate the impact of a new soybean oil (MON 87705) when substituted for the liquid soybean oil component of four target food categories: margarine (stick, spread/tub, light), salad dressing, mayonnaise and spread, and “home use” liquid soybean oil. The new MON 87705 has higher oleic (18:1), lower palmitic (16:0) and linoleic (18:2), and slightly lower stearic (18:0) acid levels than the conventional liquid soybean oil.

A stepwise approach was undertaken including estimating the current daily intake of total fat, and of the five major fatty acids (FA)¹ from all foods in the diet, from the foods targeted for replacement, and from the target soy oil component of the target foods, and subsequently estimating the new total daily dietary intake of FA as the result of the substitution of the liquid soy oil with MON 87705 in the target foods. The major sources of data that were used to conduct the analysis include (1) the food intake and nutrient composition from NHANES 2003-2004 and 2005-2006, (2) Exponent’s proprietary “recipes,” (3) the “baseline” FA profile for soybean oil used in the target food categories that was updated from the baseline profile previously developed in 2006², (4) the foods targeted for replacement and FA profile for MON 87705.

The four target food categories that were selected represent 94% of the replaceable liquid soybean oil market. For the US population, the soybean oil component of the target foods contributes an average of 4.27 g/day of total fat (7.10 g/day mean *per user*); this amounts to approximately 5.4% of total fat from the whole diet. At the 90th percentile, *per user*, the total fat contribution from the soybean oil component of the target foods is 16.28 g/day, approximately 12.6% of total fat from the whole diet. As such, <13% of total dietary fat is expected to be impacted by shifting to MON 87705..

¹ These are: 16:0 palmitic, 18:0 stearic, 18:1 oleic, 18:2 linoleic and 18:3 linolenic

² Update was based on review and comments provided by Monsanto (Personal Communication, April 2009, See Appendix A)

The substitution of MON 87705 for the liquid soybean oil in salad dressings, mayonnaise and spreads, liquid soybean oil used in the home and margarine resulted in a 3-fold increase in oleic acid intake from 1.04 g/day to 3.13 g/day at the mean *per capita* for the overall US population from these food categories. Similarly, at the 90th percentile *per user*, an approximately 3-fold increase from 3.86g/day to 12.22 g/day was observed for the overall US population from these food categories. These changes in the in the target foods translated to approximately 10.8% and 27.2% increase in the total dietary intake of oleic acid, mean *per capita* and 90th percentile *per user*, respectively. As a result, the mean *per capita* total dietary intake of oleic acid post-MON 87705 substitution is 30.29 g/day (90th percentile *per user* 57.52 g/day).

At baseline, from the target soybean oil component of the target foods, the mean *per capita* intake of palmitic (16:0) for the US population is 0.45 g/day (1.71 g/day at the 90th percentile *per user*) and linoleic (18:2) is 1.93 g/day (7.90 g/day at the 90th percentile *per user*). After substitution with MON 87705, the mean *per capita* intake of palmitic from the target soybean oil component decreases to 0.13 g/day (0.48 g/day at the 90th percentile *per user*), and linoleic intake from the target soybean oil component decreases to 0.39 g/day (1.58 g/day at the 90th percentile *per user*). These observed decreases associated with the target foods are consistent with the FA profile of MON 87705 having a lower percentage of these two FA than the conventional liquid soybean oil. Since the target oil/foods is a small fraction of the total dietary fat intake (<13%), overall, these small decreases lead to a very small reduction from the current *mean capita* total dietary intake of palmitic for the US population from 14.38 g/day (23.62, 90th percentile *per user*) to 13.83 g/day (21.48 g/day, 90th percentile *per user*).

Consistent with slightly lower stearic and unchanged linolenic acid levels in MON 87705 than conventional liquid soy oil, the substitution of liquid soybean oil with MON 87705 resulted in very little changes in the intake of stearic (18:0) and linolenic (18:3) fatty acids in the target foods. Hence, minimal impact on the total dietary intake of these fatty acids would be expected from the substitution with MON 87705.

2 INTRODUCTION

At the request of Monsanto, Exponent conducted an analysis to determine the impact of substituting the conventional liquid soybean oil with the new liquid soybean oil (MON 87705) for four food categories, i.e. salad dressings, mayonnaise and spreads, “home-use” liquid soybean oil, and margarines (stick, tub, and light varieties) on the current intake of total fat and five fatty acids (FA: palmitic, stearic, oleic, linoleic, linolenic).

A step-wise approach was used in this analysis. First, the current daily intake of total fat and the five FA listed above by the US population from all foods in the diet was calculated. Second, the current daily intake of total fat and the five FA from foods that are being targeted for replacement with MON 87705 (“target food baseline FA intake”) was estimated. Third, the current daily intake of total fat and the five FA from the liquid soybean oil portion of target foods was estimated. Lastly, the daily intakes of total fat and the five FA after replacing the liquid soybean oil of the target foods with MON 87705 and the impact on total dietary intakes due to such replacement were estimated. Vegetable oils, including traditional soybean oil and MON 87705, are not significant *trans* fat sources. Therefore the replacement of liquid soybean oil components of target foods with MON 87705 is not expected to have an impact of the current dietary intake of *trans* fat. As such, *trans* fat is excluded from this study analysis. Data and methods used to conduct the assessment and results are summarized in this report.

3 DATA AND METHODS

Four major sources of data were used to conduct the analysis: (1) Food intake data and nutrient composition from NHANES 2003-2004 and 2005-2006, (2) Target foods and associated oils and Exponent's proprietary "recipes;" (3) "Baseline" fatty acid profile for the oils associated with target foods, and (4) fatty acid profile for new oil, MON 87705. Exponent's proprietary software package, FARE™ version 8.43 was used to implement the analysis. The following sections describe the data and method in more details.

3.1 Food Intake and Nutrient Composition – NHANES 2003-2006

The 2003-2004 and 2005-2006 National Health Examination Survey (NHANES 2003-2006) is a complex multistage probability sample designed to be representative of the civilian U.S. population. The survey collects two-days of food intake data, in addition to nutrition, demographic, and health information. The NHANES survey over-samples minorities, low-income groups, and children, and statistical weights are provided by the National Center for Health Statistics (NCHS) to adjust for the differential probabilities of selection. Participants included 10,122 subjects in 2003-2004 and 10,348 subjects in 2005-2006. NHANES also provides nutrient composition for foods with reported consumption (USDA Food and Nutrient Database for Dietary Studies). These data are available on the NHANES website in the examination total nutrients file (CDC, 2007).³

Detailed food consumption and nutrient content data from the NHANES 2003-2006 were used to estimate the daily intake of FA from the entire diet and from the subset of foods that are being targeted for the substitution of replaceable oil with MON 87705. Each NHANES subject provided 2 days of food consumption information. The food consumption information was then translated into nutrient intakes. Specifically, the total dietary nutrient intakes for each survey participant were derived by multiplying the amount of food consumed by the concentration of each nutrient in that food and then summing that information over all the foods reported consumed by that individual and averaged over the population.

³ <http://www.cdc.gov/nchs/about/major/nhanes/datalink.htm>

$$E_t = \sum_i [(Fc)_i (NC)_i / 100]$$

E_t = total intake of nutrient from all foods

i = indexes the different food types consumed daily

Fc_i = Amount of food (i) consumed (g/day)

$(NC)_i$ = nutrient content of food (i) (g/100 g food)

3.2 Target Foods

MON 87705 would substitute for the liquid soybean oil fraction of a subset of foods in the US diet, including: salad dressings, mayonnaise and spreads, “home use liquid soybean oil,” and margarines (stick, tub, light variety). The list of specific foods included in each target food category is in Appendix B.

US retail data from 2008 show that approximately 5842 million pounds of liquid (i.e. non-hydrogenated) soybean oil were used in salad oil, cooking oil and margarine applications (HyQuest Partners, Soybean Oil Utilization Report, 2009). This is exclusive of frying applications, which generally utilize hydrogenated or low-linolenic specialty oils. The four food categories selected above represent 5498 million pounds, or 94% of the replaceable liquid soybean oil market.

3.3 Fatty Acid Profiles

3.3.1 Baseline

In order to evaluate the nutritional impact of the introduction of MON 87705 into the marketplace, information on the fatty acid profiles of the conventional liquid soybean oil in the four target food groups (i.e. “baseline FA profile”) were required.

The baseline FA for the soybean oil component of target foods developed in 2006 was reviewed and updated by Monsanto for the current assessment. Exponent’s approach to update the baseline FA profile for the soybean oil components of the target food and the updated baseline profile are summarized in Appendix A (Table A-1). In the update of the baseline FA profile,

Exponent also made use of the market research analysis that was previously conducted by Monsanto, which indicated 100% liquid soybean bean oil in today's tub margarines and creamy salad dressings.

Adjustment of Baseline FA Profile

The data for FA content of oils liquid soybean oil (ISEO, 2006) were presented as a percent of total FA. A standard lipid conversion factor of 0.96 was used for the blended oil profile for all food groups. This value is the average of the lipid conversion factors derived for each oil using the USDA Nutrient Database of Standard Reference, Release 21.

Home use Liquid Soybean Oil

While the NHANES data do not distinguish foods consumed that are commercially produced or home cooked, data for location of food consumption data are available and could serve as a surrogate for commercial versus non-commercial foods (i.e. foods eaten away from home could be considered to be commercially prepared). For liquid soybean oil we estimated the 2-day average daily intake (gm/day) by location of consumption (i.e. "all location," "eaten at home"; and "eaten away from home"). Based on this analysis, it was determined that 70% of oil were "eaten at home," hence it was assumed that 70% of these foods are "home use" The fatty acid profile for the MON 87705 were weighted by these percentages to reflect the "home use" liquid soybean oil to be targeted for replacement with MON 87705. Margarines were divided into regular stick, light stick and tub categories. The regular and light stick varieties have the same fatty acid profile (as a % of total fat) at baseline because these margarines utilize the same fat blend and corresponding fatty acid profile of that blend, which is formulated with differing amounts of water to achieve different fat per serving amounts. These values were selected from USDA *Trans* Fat Database. The tub margarine baseline fatty acid profile was selected from an Institute of Edible Shortening and Oils report (ISEO, 2006). A broad range of fatty acid compositions exist for margarines in the market place, therefore the values selected represent a simplification of the ranges for each margarine type.

The final baseline fatty acid profiles for the oil component of the foods targeted for replacement with MON 87705 are summarized in Table 1.

Table 1. Target foods and baseline fatty acid profiles (% of Fat in oil portion)

Food Description	Palmitic (16:0)	Stearic (18:0)	Oleic (18:1)	Linoleic (18:2)	Linolenic (18:3)	Total Trans Fatty Acids
Creamy Salad Dressing	10.60	3.80	23.00	51.80	6.70	0.00
Creamy Salad Dressing (low calorie)	9.93	3.69	21.67	37.38	6.77	0.55
Liquid Soybean Oil	10.60	3.80	23.00	51.80	6.70	0.00
Oil and Vinegar based Salad Dressings	10.60	3.80	23.00	51.80	6.70	0.00
Oil and Vinegar based Salad Dressings (low calorie)	9.93	3.69	21.67	37.38	6.77	0.55
Margarine Products:						
Light stick Margarine	10.67	6.70	30.05	15.02	1.53	30.45
Stick Margarine	10.67	6.70	30.05	15.02	1.53	30.45
Tub Margarine ¹	10.60	3.80	23.00	51.80	6.70	0
Mayonnaise and Miracle Whip	9.93	3.58	24.91	45.45	5.92	0.00

¹Includes margarine in mashed potatoes

3.3.2 Fatty Acid Profile for MON 87705

The fatty acid profile for the new soybean oil, MON 87705, is in Table 2 below. Since the MON 87705 is only replacing the liquid soybean oil component of the target foods, an approach developed previously and jointly by Monsanto and Exponent to blend the MON 87705 with partially hydrogenated soybean oil at varying percentages to develop a MON 87705 blend FA profile for replacement in margarine foods was used (Exponent, 2006). The FA profiles for MON 87705, the MON 87705 blend assigned to stick and light margarines, and the partially hydrogenated soybean oil (PHSBO) portion of the margarines that was used to blend the MON 87705 are summarized in Table 2. Unlike the baseline fatty acid composition for stick and light margarines, this approach produced fatty acid composition profiles for stick and light margarines that were not identical. A broad range of fatty acid compositions exist for margarines and tub margarine type spreads in the market place, therefore like the construction of the baseline, the values selected represent a simplification of the ranges for each margarine type. For the tub

margarines, the approach was to utilize oil blends representative of the margarines and spreads that are in the marketplace, which are mostly legally 0g *trans* fat per serving.

Table 2. Fatty Acid Profile for MON 87705 and MON 87705 Blend (g/100 g fat)

Replacement Oil	16:0	18:0	18:1C	18:2N6	18:3N3	<i>Trans</i> fat
MON 87705 ^a	2.4	3.3	76.5	10.1	6.7	--
MON 87705 Blend (stick margarines) ^b	7.0	11.9	51.9	2.5	1.7	24.8
MON 87705 Blend (light, stick margarine) ^c	5.5	9.1	60.1	5.1	3.4	16.5
MON 87705 ^a (tub margarine)	2.4	3.3	76.5	10.1	6.7	--
PHSBO ^d	8.5	14.8	43.7	0	0	33.0

^a All mayonnaise and spreads, salad dressings, soybean oil used in the home, and tub/spread margarines.

^b Stick 80% Fat Breakdown: PHSBO - 60% Liquid SBO (MON 87705) - 20% (Monsanto, 2006)

^c Light 40% Fat Breakdown: PHSBO - 20% Liquid SBO (MON 87705) - 20% (Monsanto, 2006)

^d Partially hydrogenated soybean oil (PHSBO) nutritional profile provided by Monsanto (2006)

It should be pointed out that substitutions of MON 87705 were done at the 100% substitution level, *i.e.*, assuming 100% of the target oil portion of the target foods was replaced with the new oil, and every eating occasion of a target food was replaced by a comparable food containing MON 87705.

The results of this study represent a theoretical, maximal effect of MON 87705 on fatty acid composition of the diet. It is likely that a lower level of substitution will actually occur in the marketplace. Assessments at the maximal level of substitution provide a reliable mean of detecting if any unfavorable nutritional impacts could occur, even when the likelihood of such occurrence is remote.

3.4 Nutrient Intake Estimation Procedures

The basic calculation of fatty acid intake from the oil blend in each food is as follows:

$$\frac{\text{Individual Food Consumption (g)}}{\text{Day}} \times \frac{\text{g oil blend}}{100\text{g Food}} \times \frac{\text{g Fatty Acid}}{100 \text{ g oil blend}}$$

4 RESULTS

4.1 Baseline: Estimated Daily Intakes of Total Fat and selected Fatty Acids from Target Soybean Oil Component of the Targeted Foods

The mean and 90th percentile intakes of total fat and five major FA from the soybean oil (prior to substitution with MON 87705) were estimated and are reported here. The *per capita* intakes for the US population and age-gender specific sub-groups expressed in g/day and as % Energy are presented in Tables 3-A and 3-B, respectively. Tables 4-A and 4-B provide the *per user* intakes in g/day and as % Energy, respectively, for the US population and age-gender specific sub-groups.

For the US population, the soybean oil component of the target foods contributes an average of 4.27 g/day of total fat (7.10 g/day mean *per user*); this amounts to approximately 5.4% of total fat from the whole diet. At the 90th percentile, *per user*, the total fat contribution from the soybean oil component of the target foods is 16.28 g/day, approximately 12.6% of total fat from the whole diet.

On a % energy basis, the mean *per capita* contribution from the soybean oil component of the target foods is 1.84% (5.31% at the 90th percentile) and the mean *per user* is 3.06% (6.83% at the 90th percentile).

4.2 Replacement: Estimated Daily Intakes of Total Fat and Selected Fatty Acids from MON 87705 Oil Component of the Targeted Foods

The mean and 90th percentile intakes of total fat and five major FA from the new soybean oil (MON 87705) in target foods were estimated. The *per capita* intakes for the US population and age-gender specific sub-groups expressed in g/day and as % Energy are presented in Tables 5-A and 5-B, respectively. Tables 6-A and 6-B provide the *per user* intakes in g/day and as % Energy, respectively, for the US population and age-gender specific sub-groups.

Consistent with the fatty acid profile associated with the MON 87705, intake of oleic (18:1) is the largest among the five FA evaluated when replacement with MON 87705 was carried out. For the US population, the mean *per capita* intake of oleic (18:1) from the new oil component of target foods is 3.13 g/day (1.35% Energy). At the 90th percentile, *per capita*, intake of oleic acid from the new oil component of target foods is 9.23 g/day (3.96% Energy). On the *per user* basis, mean intake of oleic (18:1) is 5.20 g/day (2.24% Energy), 90th percentile intake is 12.22 g/day (5.12% Energy).

4.2.1 Impact of Replacement on the Target Oil Portion of Target Foods

Based on the intake estimates of the five FA pre-replacement (Tables 3-A&B, 4-A&B) and post-replacement (Tables 5-A&B, 6-A&B) the percent change in the intake of the five FA from the portion of the oil that were replaced in the target foods were calculated and summarized in Tables 7-A (mean *per capita*) and 7-B (90th percentile *per user*). As expected, the mean *per capita* intake of oleic acid for the US population has the highest increase from 1.04 g/day (pre-replacement) to 3.13 g/day (post-replacement), approximately 201% increase.

Also, to determine which target food group is having the most impact in the observed absolute changes in total daily fatty acid intake, FA intake estimates in g/day for the US population were also developed for each of the four target food groups: salad dressings, mayonnaise and spreads, “home use” liquid soybean oil, and margarines (stick, tub, and light variety). These results are summarized in Table 7-C. Salad dressing is the largest contributor to fat intake from liquid soybean oil in these four categories, hence, changes in individual fatty acid intake are most influenced by this category.

Mean *per capita* intake values of fat and the five FA from each of the four target food groups in Table 7-C can be summed to estimate the mean *per capita* intake estimates for total fat and the five FA from all the foods in all four target categories, as provided in Table 7-A. It should be noted that the sums calculated from Table 7-C are within 0.1 g of the values in Table 7-A due to rounding. In contrast, such an approach cannot be carried out when working with mean *per user*

and 90th percentile estimates for the following reasons:

- Mean *per user* estimates are calculated with the number of users (eaters) in the denominator. The number of users is different between the four target food groups. As such it is inappropriate to add mean *per user* from each of the four target food groups to estimate mean *per user* from all food groups combined.
- The distributions of intake estimates for the four target food groups are not the same. As such, the 90th percentile consumers in one food group are not the same 90th percentile consumers in another food group. Thus, it is not appropriate to add 90th percentile estimates from the four target food groups to estimate 90th percentile estimates from all food groups combined.

4.3 Estimated Daily Intake of Total Fat and Selected Fatty Acids from Target Foods

The daily intake of total fat and five major FA from the foods that are targeted for substitution with MON 87705 were analyzed for the US population and age-gender specific subgroups on a *per capita* and *per user* basis and are summarized in Tables 8 through 9. Intakes in grams per day are provided in Tables 8-A, B, C, D, E and F and intakes expressed as % Energy are provided in Tables 9-A, B, C, D, E and F. As analyzed, the fatty acid intakes reported in this section came from the liquid soybean oil components and other non-soybean oil components of the target foods. As such these intake estimates are inclusive of the baseline intake values provided earlier in section 4.1, Tables 3's and 4's, where intakes from the target oil portion of the target foods are presented.

On a mean *per capita* basis, total fat intake from the target foods is 5.21 g/day, which is approximately 6.5% of the total dietary fat intake from all foods. On a mean *per user* basis, total fat intake from target foods is 8.11 g/day, approximately 10.2% of total dietary fat intake. On the *per user* basis, the 90th percentile total fat intake from target foods is 19.19 g/day,

approximately 14.8% of total dietary fat intake.

4.4 Current Daily Intake of Total Fat and Five Fatty Acids from All Foods

The average daily intake of total fat and of five FA for the overall US population from the total diet was estimated based upon the NHANES 2003-2006 publicly available data. These five FA are, palmitic acid, stearic acid, oleic acid, linoleic acid, and linolenic acid. These FA were selected because they are the major FA in the diet, and the intakes of these FA could change as the result of modifications in the targeted liquid soybean oil fatty acid profiles used to produce foods for the American market.

Using NHANES 2003-2006 food consumption data for the US population and nutrient data described earlier, Exponent estimated the average intake of total fat and of five FA for the overall US population from the entire diet. Average and 90th percentile intakes were estimated for the total population and for eight age/sex groups on a gram/person/day basis. The average daily intake over two 24-hour periods was computed for each of the nutrients.

Results of intake in g/day for the U.S. population and for male and female age groups in g/day are in tables 10-A, B and C, respectively. Results in % Energy for the U.S. population and for male and female age groups are in tables 11-A, B and C. Since this assessment captured all foods in the diet and all individuals in the US population are “users”, the per capita and per user intake estimates are the same.

4.5 Impact of Replacement on Total Daily Intake of Fatty Acids

The impact of the replacement of liquid soybean oils in the target foods with MON 87705 on the total daily intake (g/day and % Energy) of the five FA (palmitic, stearic, oleic, linoleic, linolenic in the diet of the US population are summarized in Tables 12-A & B (mean *per capita*, and 90th percentile *per user*). The projected impact of the replacement on the total daily intake of the five fatty acids was based on the estimated percentage change observed in the targeted replacement.

Since the target oil component in target foods represents only part of total dietary fat, the percent contribution to total dietary fat from the target oil component was also accounted for in the impact analysis (i.e. % change in target oil x % contribution to total dietary fat = % impact on total dietary FA).⁴

As would be expected, the replacement with MON 87705 does not change the total daily fat intake, which remains at 79.58 g/day (33.61% Energy) on the mean *per capita* basis, and at 129.40 g/day (42.88% Energy) at the 90th percentile *per user*. Overall there is an increase in the total daily intake of oleic (18:1) from 27.34 g/day (11.49% Energy) to 30.29 g/day (12.75% Energy) on a mean *per capita* basis, and an increase from 45.20 g/day (15.16% Energy) to 57.52 g/day (20.28% Energy) at the 90th percentile *per user* (see Tables 12-A and 12-B).

The impact of the replacement with MON 87705 on the total daily intake (g/day) of the five major FA (palmitic, stearic, oleic, linoleic, linolenic) in the diet of the US males and females stratified by age are summarized in Tables 13-A (mean *per capita*, US males, g/day and % Energy), 13-B (mean *per capita*, US females, g/day and % Energy), 14-A (90th percentile *per user*, US males, g/day and % Energy) and 14-B (90th percentile *per user*, US females, g/day and % Energy). The pattern of decrease and increase in total daily intake of FA in these sub-groups are similar to that of the overall US population, with oleic (18:1) having the greatest increase and palmitic acid (16:0) and linoleic (18:2) having small decreases.

⁴ Calculation of absolute impact (i.e. subtraction of FA intake from original oil portion and adding FA intake from the new oil to total dietary FA) is not appropriate since the database supporting the impact assessment in the target oil component and the database upon which total dietary FA intake were calculated are different.

5 CONCLUSIONS

For the US population, the soybean oil component of the target foods contributes an average of 4.27 g/day of total fat (7.10 g/day mean *per user*); this amounts to approximately 5.4% of total fat from the whole diet. At the 90th percentile, *per user*, the total fat contribution from the soybean oil component of the target foods is 16.28 g/day, approximately 12.6% of total fat from the whole diet. As such the impact of MON 87705 is expected be less than 13% of total dietary fat.

The substitution of MON 87705 for the liquid soybean oil in salad dressings, mayonnaise and spreads, liquid soybean oil used in the home and margarines resulted in a 3-fold increase in oleic acid intake from 1.04 g/day to 3.13 g/day at the mean *per capita* for the overall US population. Similarly, at the 90th percentile *per user*, an approximately 3-fold increase from 3.86 g/day to 12.22 g/day was observed for the overall US population. These changes in the in the target foods translated to approximately 10.8% and 27.2% increase in the total dietary intake of oleic acid, mean *per capita* and 90th percentile *per user*, respectively. As the result, the mean *per capita* total dietary intake of oleic acid post-MON 87705 substitution is 30.29 g/day (90th percentile *per user* 57.52 g/day).

At baseline, from the target soybean oil component of the target foods, the mean *per capita* intake of palmitic (16:0) for the US population is at 0.45 g/day (1.71 g/day at the 90th percentile *per user*) and linoleic (18:2) at 1.93 g/day (7.90 g/day at the 90th percentile *per user*). After substitution with MON 87705, the mean *per capita* intake of palmitic decreases to 0.13 g/day (0.48 g/day at the 90th percentile *per user*), and linoleic intake decreases to 0.39 g/day (1.58 g/day at the 90th percentile *per user*). These observed decreases associated with the target foods are consistent with the FA profile of MON 87705 having lower percentage of these two FA than the conventional liquid soybean oil. Since the target oil/foods is a small fraction of the total dietary fat intake (<13%), overall, these decreases lead to a small reduction from the current *mean capita* total dietary intake of palmitic for the US population from 14.38 g/day (23.62

g/day, 90th percentile per user) to 13.83 g/day (21.48 g/day, 90th percentile per user).

Consistent with a very slight lower stearic and unchanged linolenic acid levels in MON 87705 than conventional liquid soybean oil, the substitution of liquid soybean oil with MON 87705 resulted in very little changes in the intake of stearic (18:0) and linolenic (18:3) fatty acids in the target foods. Hence, minimal impact on the total dietary intake of these fatty acids would be expected from the substitution with MON 87705.

Substitutions of MON87705 were done at the 100% substitution level, *i.e.*, assuming 100% of the target oil portion of the target foods was replaced with the new oil, and every eating occasion of a target food was replaced by a comparable food containing MON87705. Further, several assumptions about formulation and range of variability in products were made to simplify the fatty acid profile for each target food. Therefore, the values estimated here represent a theoretical, maximal effect of MON87705 on fatty acid composition of the diet. It is likely that a lower level of substitution will actually occur in the marketplace and that introduced products will have small variations in formulation compared to those used in this assessment. Assessments at the maximal level of substitution provide a reliable mean of detecting if any unfavorable nutritional impacts could occur, even when the likelihood of such occurrence is remote, and provide estimates of expected fatty acid changes.

6 REFERENCES

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Table 3-A. BASELINE – *Per Capita* Intakes of Fatty Acids from Soybean Oil Component in Target Foods (g/day)

Population		Total Fat	Palmitic 16:0	Stearic 18:0	Oleic 18:1	Linoleic 18:2	Linolenic 18:3
US	Mean	4.27	0.45	0.18	1.04	1.93	0.25
	90th percentile	12.58	1.31	0.51	3.08	5.82	0.75
Males 1-8	Mean	1.66	0.17	0.08	0.42	0.67	0.09
	90th percentile	4.48	0.47	0.23	1.21	1.79	0.23
Males 9-19	Mean	3.28	0.34	0.14	0.81	1.43	0.18
	90th percentile	9.89	1.01	0.40	2.52	4.29	0.55
Males 20-49	Mean	5.11	0.53	0.21	1.24	2.34	0.30
	90th percentile	15.36	1.63	0.63	3.76	7.37	0.95
Males 50+	Mean	5.51	0.58	0.23	1.35	2.48	0.32
	90th percentile	15.08	1.57	0.61	3.63	6.83	0.88
Females 1-8	Mean	1.79	0.19	0.08	0.45	0.73	0.09
	90th percentile	5.30	0.54	0.25	1.35	2.16	0.28
Females 9-19	Mean	3.52	0.37	0.15	0.86	1.58	0.20
	90th percentile	10.06	1.07	0.41	2.47	4.37	0.56
Females 20-49	Mean	4.59	0.48	0.19	1.11	2.10	0.27
	90th percentile	13.20	1.39	0.54	3.24	6.17	0.79
Females 50+	Mean	4.65	0.49	0.19	1.12	2.13	0.28
	90th percentile	12.34	1.31	0.53	3.04	6.02	0.78

Table 3-B. BASELINE -- *Per Capita* Intakes of Fatty Acids from Soybean Oil Component in Target Foods (% Energy)

Population		Total Fat	Palmitic 16:0	Stearic 18:0	Oleic 18:1	Linoleic 18:2	Linolenic 18:3
US	Mean	1.84	0.19	0.08	0.45	0.83	0.11
	90th percentile	5.31	0.55	0.22	1.29	2.48	0.32
Males 1-8	Mean	0.81	0.08	0.04	0.20	0.32	0.04
	90th percentile	2.36	0.25	0.11	0.64	0.97	0.12
Males 9-19	Mean	1.16	0.12	0.05	0.29	0.50	0.06
	90th percentile	3.51	0.36	0.16	0.90	1.55	0.20
Males 20-49	Mean	1.66	0.17	0.07	0.40	0.76	0.10
	90th percentile	5.04	0.52	0.20	1.21	2.37	0.31
Males 50+	Mean	2.20	0.23	0.09	0.54	0.99	0.13
	90th percentile	5.82	0.61	0.24	1.44	2.73	0.35
Females 1-8	Mean	0.93	0.10	0.04	0.23	0.38	0.05
	90th percentile	2.92	0.31	0.13	0.72	1.18	0.15
Females 9-19	Mean	1.59	0.17	0.07	0.39	0.71	0.09
	90th percentile	4.75	0.49	0.20	1.16	2.19	0.28
Females 20-49	Mean	2.20	0.23	0.09	0.53	1.00	0.13
	90th percentile	6.48	0.68	0.26	1.55	3.05	0.39
Females 50+	Mean	2.54	0.27	0.10	0.61	1.16	0.15
	90th percentile	6.50	0.69	0.26	1.53	3.14	0.41

Table 4-A. BASELINE -- Per User Intakes of Fatty Acids from Soybean Oil Component in Target Foods (g/day)

Population		Total Fat	Palmitic 16:0	Stearic 18:0	Oleic 18:1	Linoleic 18:2	Linolenic 18:3
US	Mean	7.10	0.74	0.29	1.73	3.21	0.41
	90th percentile	16.28	1.71	0.66	3.86	7.90	1.03
Males 1-8	Mean	3.43	0.36	0.16	0.87	1.39	0.18
	90th percentile	8.68	0.92	0.38	2.20	3.87	0.50
Males 9-19	Mean	7.25	0.75	0.30	1.80	3.17	0.41
	90th percentile	15.50	1.64	0.69	3.81	6.83	0.88
Males 20-49	Mean	8.88	0.92	0.36	2.16	4.07	0.53
	90th percentile	20.33	2.16	0.80	4.80	9.68	1.26
Males 50+	Mean	7.91	0.83	0.33	1.93	3.56	0.46
	90th percentile	17.46	1.83	0.70	4.19	8.25	1.07
Females 1-8	Mean	3.57	0.37	0.16	0.90	1.47	0.19
	90th percentile	8.06	0.85	0.35	1.98	3.64	0.47
Females 9-19	Mean	6.28	0.66	0.26	1.53	2.82	0.36
	90th percentile	14.18	1.49	0.57	3.37	6.68	0.87
Females 20-49	Mean	7.13	0.75	0.29	1.72	3.26	0.42
	90th percentile	16.19	1.71	0.66	3.92	8.10	1.05
Females 50+	Mean	6.56	0.69	0.27	1.59	3.00	0.39
	90th percentile	14.94	1.57	0.60	3.58	7.35	0.95

Table 4-B. BASELINE -- Per User Intakes of Fatty Acids from Soybean Oil Component in Target Foods (% Energy)

Population		Total Fat	Palmitic 16:0	Stearic 18:0	Oleic 18:1	Linoleic 18:2	Linolenic 18:3
US	Mean	3.06	0.32	0.13	0.75	1.38	0.18
	90th percentile	6.83	0.72	0.27	1.64	3.26	0.42
Males 1-8	Mean	1.67	0.17	0.08	0.42	0.67	0.09
	90th percentile	3.60	0.38	0.18	0.94	1.62	0.21
Males 9-19	Mean	2.56	0.27	0.11	0.64	1.10	0.14
	90th percentile	5.77	0.59	0.24	1.44	2.64	0.34
Males 20-49	Mean	2.88	0.30	0.12	0.70	1.32	0.17
	90th percentile	6.41	0.67	0.25	1.53	3.03	0.40
Males 50+	Mean	3.17	0.33	0.13	0.77	1.42	0.18
	90th percentile	6.88	0.73	0.29	1.67	3.20	0.42
Females 1-8	Mean	1.86	0.19	0.08	0.47	0.76	0.10
	90th percentile	4.00	0.41	0.19	1.02	1.78	0.23
Females 9-19	Mean	2.83	0.29	0.12	0.69	1.26	0.16
	90th percentile	6.38	0.67	0.26	1.51	3.06	0.39
Females 20-49	Mean	3.41	0.36	0.14	0.82	1.56	0.20
	90th percentile	8.03	0.84	0.32	1.90	3.75	0.49
Females 50+	Mean	3.59	0.38	0.15	0.87	1.64	0.21
	90th percentile	7.54	0.79	0.31	1.83	3.66	0.47

Table 5-A. *Per Capita* Intakes of Fatty Acids from MON 87705 after Replacement of Liquid Soybean Oil in Target Foods (g/day)

Population	Statistics	Total Fat	Palmitic 16:0	Stearic 18:0	Oleic 18:1	Linoleic 18:2	Linolenic 18:3
US	Mean	4.27	0.13	0.19	3.13	0.39	0.26
	90th percentile	12.62	0.37	0.55	9.23	1.18	0.78
Males 1-8	Mean	1.66	0.06	0.09	1.16	0.13	0.09
	90th percentile	4.47	0.20	0.33	3.03	0.37	0.24
Males 9-19	Mean	3.29	0.10	0.15	2.39	0.30	0.20
	90th percentile	9.91	0.31	0.45	6.96	0.92	0.61
Males 20-49	Mean	5.12	0.15	0.22	3.78	0.48	0.32
	90th percentile	15.53	0.43	0.63	11.53	1.51	0.97
Males 50+	Mean	5.51	0.17	0.25	4.01	0.50	0.33
	90th percentile	15.13	0.44	0.66	10.86	1.37	0.91
Females 1-8	Mean	1.79	0.06	0.10	1.26	0.15	0.10
	90th percentile	5.30	0.20	0.33	3.76	0.45	0.30
Females 9-19	Mean	3.52	0.11	0.16	2.58	0.32	0.21
	90th percentile	10.10	0.31	0.47	7.37	0.92	0.61
Females 20-49	Mean	4.60	0.14	0.20	3.38	0.42	0.28
	90th percentile	13.40	0.38	0.55	9.89	1.24	0.82
Females 50+	Mean	4.66	0.14	0.20	3.42	0.43	0.28
	90th percentile	12.44	0.38	0.54	9.15	1.19	0.79

Table 5-B. *Per Capita* Intakes of Fatty Acids from MON 87705 after Replacement of Liquid Soybean Oil in Target Foods (% Energy)

Population	Statistics	Total Fat	Palmitic 16:0	Stearic 18:0	Oleic 18:1	Linoleic 18:2	Linolenic 18:3
US	Mean	1.84	0.06	0.08	1.35	0.17	0.11
	90th percentile	5.32	0.16	0.24	3.96	0.51	0.33
Males 1-8	Mean	0.81	0.03	0.05	0.56	0.06	0.04
	90th percentile	2.36	0.09	0.15	1.62	0.19	0.13
Males 9-19	Mean	1.16	0.04	0.05	0.84	0.10	0.07
	90th percentile	3.52	0.13	0.19	2.58	0.32	0.21
Males 20-49	Mean	1.66	0.05	0.07	1.23	0.15	0.10
	90th percentile	5.06	0.14	0.21	3.77	0.49	0.32
Males 50+	Mean	2.20	0.07	0.10	1.61	0.20	0.13
	90th percentile	5.86	0.18	0.27	4.25	0.55	0.36
Females 1-8	Mean	0.93	0.03	0.05	0.65	0.08	0.05
	90th percentile	2.92	0.10	0.16	1.99	0.24	0.16
Females 9-19	Mean	1.59	0.05	0.07	1.16	0.14	0.09
	90th percentile	4.70	0.15	0.22	3.47	0.43	0.29
Females 20-49	Mean	2.20	0.07	0.10	1.62	0.20	0.13
	90th percentile	6.50	0.19	0.29	4.80	0.61	0.40
Females 50+	Mean	2.55	0.08	0.11	1.87	0.23	0.15
	90th percentile	6.54	0.19	0.30	4.87	0.62	0.41

Table 6-A. Per User Intakes of Fatty Acids from MON 87705 after Replacement of Liquid Soybean Oil in Target Foods (g/day)

Population	Statistics	Total Fat	Palmitic 16:0	Stearic 18:0	Oleic 18:1	Linoleic 18:2	Linolenic 18:3
US	Mean	7.10	0.21	0.32	5.20	0.65	0.43
	90th percentile	16.28	0.48	0.70	12.22	1.58	1.05
Males 1-8	Mean	3.43	0.12	0.19	2.40	0.28	0.18
	90th percentile	8.72	0.28	0.42	6.11	0.77	0.52
Males 9-19	Mean	7.27	0.22	0.33	5.29	0.65	0.43
	90th percentile	15.54	0.57	0.87	11.17	1.46	0.95
Males 20-49	Mean	8.90	0.26	0.38	6.57	0.83	0.55
	90th percentile	20.33	0.58	0.86	15.02	1.93	1.28
Males 50+	Mean	7.92	0.24	0.36	5.77	0.72	0.47
	90th percentile	17.40	0.52	0.77	12.92	1.65	1.08
Females 1-8	Mean	3.57	0.13	0.20	2.51	0.29	0.19
	90th percentile	8.05	0.29	0.46	5.65	0.72	0.48
Females 9-19	Mean	6.28	0.19	0.28	4.59	0.57	0.38
	90th percentile	14.15	0.41	0.64	10.67	1.33	0.88
Females 20-49	Mean	7.13	0.21	0.31	5.24	0.65	0.43
	90th percentile	16.16	0.47	0.67	12.26	1.59	1.05
Females 50+	Mean	6.57	0.19	0.29	4.83	0.60	0.40
	90th percentile	15.08	0.44	0.65	11.24	1.47	0.97

Table 6-B. Per User Intakes of Fatty Acids from MON 87705 after Replacement of Liquid Soybean Oil in Target Foods (% Energy)

Population	Statistics	Total Fat	Palmitic 16:0	Stearic 18:0	Oleic 18:1	Linoleic 18:2	Linolenic 18:3
US	Mean	3.06	0.09	0.14	2.24	0.28	0.18
	90th percentile	6.83	0.21	0.31	5.12	0.66	0.44
Males 1-8	Mean	1.67	0.06	0.09	1.16	0.13	0.09
	90th percentile	3.56	0.15	0.23	2.58	0.33	0.22
Males 9-19	Mean	2.56	0.08	0.12	1.85	0.23	0.15
	90th percentile	5.75	0.19	0.29	4.24	0.56	0.37
Males 20-49	Mean	2.89	0.08	0.12	2.13	0.27	0.18
	90th percentile	6.41	0.17	0.26	4.81	0.61	0.41
Males 50+	Mean	3.17	0.10	0.14	2.31	0.29	0.19
	90th percentile	6.87	0.21	0.31	5.09	0.66	0.43
Females 1-8	Mean	1.86	0.07	0.10	1.31	0.15	0.10
	90th percentile	4.02	0.15	0.23	2.84	0.36	0.24
Females 9-19	Mean	2.84	0.09	0.13	2.07	0.25	0.17
	90th percentile	6.37	0.19	0.29	4.81	0.62	0.41
Females 20-49	Mean	3.42	0.10	0.15	2.51	0.31	0.21
	90th percentile	8.06	0.23	0.33	5.86	0.74	0.49
Females 50+	Mean	3.59	0.11	0.16	2.64	0.33	0.22
	90th percentile	7.55	0.23	0.34	5.67	0.72	0.48

Table 7-A. Mean *Per Capita* Fatty Acid Intake from Soybean Oil Component in Target Foods Pre- and Post- MON 87705 Soybean Oil Replacement, U.S Population

Fatty Acids	g/day			% Energy		
	Pre-replacement	Post-replacement	%Change	Pre-replacement	Post-replacement	%Change
Palmitic 16:0	0.45	0.13	-71.11	0.19	0.06	-68.42
Stearic 18:0	0.18	0.19	5.56	0.08	0.08	0.00
Oleic 18:1 (cis)	1.04	3.13	200.96	0.45	1.35	200.00
Linoleic 18:2 (cis)	1.93	0.39	-79.79	0.83	0.17	-79.52
Linolenic 18:3 (cis)	0.25	0.26	4.00	0.11	0.11	0.00
Total Fat Intake	4.27	4.27	0.00	1.84	1.84	0.00

Table 7-B. 90th Percentile *Per User* Fatty Acid Intake from Soybean Oil Component in Target Foods Pre- and Post- MON 87705 Soybean Oil Replacement, U.S Population

Fatty Acids	g/day			%energy		
	Pre-replacement	Post-replacement	%Change	Pre-replacement	Post-replacement	%Change
Palmitic 16:0	1.71	0.48	-71.93	0.72	0.21	-70.83
Stearic 18:0	0.66	0.7	6.06	0.27	0.31	14.81
Oleic 18:1 (cis)	3.86	12.22	216.58	1.64	5.12	212.20
Linoleic 18:2 (cis)	7.9	1.58	-80.00	3.26	0.66	-79.75
Linolenic 18:3 (cis)	1.03	1.05	1.94	0.42	0.44	4.76
Total Fat Intake	16.28	16.28	0.00	6.83	6.83	0.00

Table 7-C. Changes in Fatty Acids Intake from Soybean Oil Component in Four Target Food Groups, U.S Population (g/day)

Fatty Acids	Statistics	Salad Dressings		Mayo and Spreads		Home Use LSBO		Margarines	
		Pre-replacement	Post-replacement	Pre-replacement	Post-replacement	Pre-replacement	Post-replacement	Pre-replacement	Post-replacement
16:0	Mean per capita	0.23	0.05	0.10	0.02	0.00	0.00	0.12	0.05
	90th percentile per capita	0.84	0.19	0.36	0.09	0.00	0.00	0.40	0.19
	Mean per user	0.80	0.18	0.43	0.10	0.27	0.13	0.41	0.18
	90th percentile per user	1.76	0.40	1.08	0.26	0.39	0.18	0.83	0.37
18:0	Mean per capita	0.08	0.07	0.04	0.03	0.00	0.00	0.06	0.09
	90th percentile per capita	0.30	0.26	0.13	0.12	0.00	0.00	0.21	0.32
	Mean per user	0.29	0.25	0.15	0.14	0.10	0.09	0.20	0.29
	90th percentile per user	0.63	0.55	0.39	0.36	0.14	0.13	0.42	0.63
18:1	Mean per capita	0.49	1.64	0.25	0.75	0.00	0.01	0.30	0.73
	90th percentile per capita	1.83	6.10	0.90	2.78	0.00	0.00	1.07	2.40
	Mean per user	1.74	5.81	1.07	3.29	0.59	1.57	1.03	2.49
	90th percentile per user	3.82	12.68	2.71	8.32	0.85	2.25	2.12	5.36
18:2	Mean per capita	1.10	0.22	0.45	0.10	0.01	0.00	0.38	0.07
	90th percentile per capita	4.06	0.81	1.65	0.37	0.00	0.00	1.12	0.21
	Mean per user	3.90	0.77	1.96	0.43	1.34	0.60	1.29	0.25
	90th percentile per user	8.54	1.67	4.95	1.10	1.92	0.86	2.92	0.57
18:3	Mean per capita	0.14	0.14	0.06	0.07	0.00	0.00	0.05	0.05
	90th percentile per capita	0.54	0.53	0.21	0.24	0.00	0.00	0.13	0.14
	Mean per user	0.51	0.51	0.25	0.29	0.17	0.18	0.16	0.16
	90th percentile per user	1.10	1.11	0.64	0.73	0.25	0.25	0.38	0.38
Total Fat	Mean per capita	2.14	2.14	0.98	0.98	0.01	0.01	1.13	1.14
	90th percentile per capita	8.02	7.97	3.63	3.63	0.00	0.00	3.73	3.73
	Mean per user	7.59	7.60	4.31	4.30	2.58	2.58	3.87	3.87
	90th percentile per user	16.54	16.57	10.88	10.88	3.70	3.70	7.79	7.90

Table 8-A. Target Foods: Current daily intake of total fat and five fatty acids (palmitic, stearic, oleic, linoleic, and linolenic), *per capita* mean and 90th percentile, US population (g/day)

Fatty Acids	Mean (g/day)	90th percentile (g/day)
Palmitic 16:0	0.60	1.77
Stearic 18:0	0.26	0.76
Oleic 18:1	1.54	4.31
Linoleic 18:2	2.03	6.12
Linolenic 18:3	0.27	0.82
Total Fat Intake	5.21	15.28

Table 8-B. Target Foods: Current daily intake of total fat and five fatty acids (palmitic, stearic, oleic, linoleic, and linolenic), *per capita* mean and 90th percentile US Males (g/day)

Fatty Acids	Males 1-8 yrs		Males 9-19 yrs		Males 20-49 yrs		Males 50+yrs	
	Mean	90th percentile	Mean	90th percentile	Mean	90th percentile	Mean	90th percentile
Palmitic 16:0	0.25	0.72	0.46	1.31	0.70	2.12	0.76	2.06
Stearic 18:0	0.12	0.35	0.20	0.59	0.29	0.88	0.34	0.90
Oleic 18:1	0.68	2.11	1.21	3.35	1.69	5.13	1.91	4.79
Linoleic 18:2	0.75	2.02	1.59	4.53	2.43	7.68	2.46	6.71
Linolenic 18:3	0.10	0.27	0.21	0.61	0.33	1.01	0.33	0.87
Total Fat Intake	2.10	5.68	4.05	11.38	6.04	18.31	6.45	17.16

Table 8-C. Target Foods: Current daily intake of total fat and five fatty acids (palmitic, stearic, oleic, linoleic, and linolenic), *per capita* mean and 90th percentile US Females (g/day)

Fatty Acids	Females 1-8 yrs		Females 9-19 yrs		Females 20-49 yrs		Females 50+yrs	
	Mean	90th percentile	Mean	90th percentile	Mean	90th percentile	Mean	90th percentile
Palmitic 16:0	0.29	0.77	0.53	1.54	0.68	1.99	0.64	1.74
Stearic 18:0	0.13	0.38	0.23	0.59	0.29	0.85	0.29	0.77
Oleic 18:1	0.77	2.23	1.49	3.96	1.71	4.72	1.67	4.64
Linoleic 18:2	0.87	2.49	1.86	5.30	2.27	6.58	2.13	6.11
Linolenic 18:3	0.12	0.31	0.25	0.70	0.31	0.88	0.29	0.82
Total Fat Intake	2.40	6.38	4.78	13.53	5.83	16.46	5.54	15.52

Table 8-D. Target Foods: Current daily intake of total fat and five fatty acids (palmitic, stearic, oleic, linoleic, and linolenic), *per user* mean and 90th percentile, US population (g/day)

Fatty Acids	Mean (g/day)	90th percentile (g/day)
Palmitic 16:0	0.94	2.23
Stearic 18:0	0.41	0.96
Oleic 18:1	2.39	5.57
Linoleic 18:2	3.16	7.90
Linolenic 18:3	0.43	1.07
Total Fat Intake	8.11	19.19

Table 8-E. Target Foods: Current daily intake of total fat and five fatty acids (palmitic, stearic, oleic, linoleic, and linolenic), *per user* mean and 90th percentile, US Males (g/day)

Fatty Acids	Males 1-8 yrs		Males 9-19 yrs		Males 20-49 yrs		Males 50+yrs	
	Mean	90th percentile	Mean	90th percentile	Mean	90th percentile	Mean	90th percentile
Palmitic 16:0	0.48	1.15	0.92	2.16	1.15	2.69	1.01	2.37
Stearic 18:0	0.23	0.55	0.40	0.97	0.48	1.07	0.46	1.04
Oleic 18:1	1.31	2.72	2.44	6.35	2.79	6.13	2.55	5.59
Linoleic 18:2	1.46	3.76	3.20	8.28	4.00	9.72	3.28	7.59
Linolenic 18:3	0.19	0.50	0.42	1.13	0.54	1.31	0.44	1.04
Total Fat Intake	4.09	9.77	8.13	20.63	9.93	23.07	8.60	19.90

Table 8-F. Target Foods: Current daily intake of total fat and five fatty acids (palmitic, stearic, oleic, linoleic, and linolenic), *per user* mean and 90th percentile, US Females (g/day)

Fatty Acids	Females 1-8 yrs		Females 9-19 yrs		Females 20-49 yrs		Females 50+yrs	
	Mean	90th percentile	Mean	90th percentile	Mean	90th percentile	Mean	90th percentile
Palmitic 16:0	0.53	1.26	0.88	1.94	0.98	2.30	0.85	1.93
Stearic 18:0	0.24	0.57	0.38	0.86	0.41	1.03	0.38	0.88
Oleic 18:1	1.42	3.19	2.47	5.23	2.48	5.67	2.23	5.17
Linoleic 18:2	1.61	4.04	3.08	6.56	3.29	8.16	2.85	6.98
Linolenic 18:3	0.21	0.54	0.42	0.91	0.45	1.13	0.39	0.93
Total Fat Intake	4.43	10.92	7.91	17.33	8.45	20.00	7.40	17.43

Table 9-A. Target Foods: Current daily intake of total fat and five fatty acids (palmitic, stearic, oleic, linoleic, and linolenic), mean *per capita* and 90th percentile, US population (% Energy)

Fatty Acids	Mean % Energy	90th percentile % Energy
Palmitic 16:0	0.26	0.73
Stearic 18:0	0.11	0.32
Oleic 18:1	0.66	1.86
Linoleic 18:2	0.86	2.54
Linolenic 18:3	0.12	0.35
Total Fat Intake	2.23	6.44

Table 9-B. Target Foods: Current daily intake of total fat and five fatty acids (palmitic, stearic, oleic, linoleic, and linolenic), mean *per capita* and 90th percentile, US Males (% Energy)

Fatty Acids	Males 1-8 yrs		Males 9-19 yrs		Males 20-49 yrs		Males 50+ yrs	
	Mean	90th percentile	Mean	90th percentile	Mean	90th percentile	Mean	90th percentile
Palmitic 16:0	0.12	0.38	0.16	0.51	0.22	0.66	0.30	0.79
Stearic 18:0	0.06	0.18	0.07	0.24	0.10	0.27	0.14	0.35
Oleic 18:1	0.33	1.01	0.43	1.29	0.54	1.55	0.76	1.93
Linoleic 18:2	0.36	1.03	0.56	1.71	0.79	2.45	0.97	2.52
Linolenic 18:3	0.05	0.14	0.07	0.21	0.11	0.33	0.13	0.35
Total Fat Intake	1.02	3.04	1.44	4.26	1.95	5.60	2.57	6.53

Table 9-C. Target Foods: Current daily intake of total fat and five fatty acids (palmitic, stearic, oleic, linoleic, and linolenic), mean *per capita* and 90th percentile, US Females (% Energy)

Fatty Acids	Females 1-8 yrs		Females 9-19 yrs		Females 20-49 yrs		Females 50+yrs	
	Mean	90th percentile	Mean	90th percentile	Mean	90th percentile	Mean	90th percentile
Palmitic 16:0	0.15	0.42	0.24	0.71	0.32	0.97	0.35	0.90
Stearic 18:0	0.07	0.22	0.10	0.31	0.13	0.39	0.16	0.41
Oleic 18:1	0.39	1.21	0.65	2.04	0.80	2.25	0.90	2.33
Linoleic 18:2	0.44	1.27	0.83	2.57	1.07	3.11	1.14	2.99
Linolenic 18:3	0.06	0.16	0.11	0.35	0.15	0.43	0.15	0.41
Total Fat Intake	1.22	3.56	2.12	6.65	2.74	7.95	3.00	7.55

Table 9-D. Target Foods: Current daily intake of total fat and five fatty acids (palmitic, stearic, oleic, linoleic, and linolenic), mean *per user* and 90th percentile, US population (% Energy)

Fatty Acids	Mean (% Energy)	90th percentile (% Energy)
Palmitic 16:0	0.40	0.94
Stearic 18:0	0.18	0.41
Oleic 18:1	1.02	2.33
Linoleic 18:2	1.34	3.26
Linolenic 18:3	0.18	0.44
Total Fat Intake	3.47	8.04

Table 9-E. Target Foods: Current daily intake of total fat and five fatty acids (palmitic, stearic, oleic, linoleic, and linolenic), *per user* mean and 90th percentile, US Males (% Energy)

Fatty Acids	Males 1-8 yrs		Males 9-19 yrs		Males 20-49 yrs		Males 50+yrs	
	Mean	90th percentile	Mean	90th percentile	Mean	90th percentile	Mean	90th percentile
Palmitic 16:0	0.24	0.53	0.33	0.73	0.37	0.84	0.40	0.94
Stearic 18:0	0.11	0.27	0.15	0.30	0.16	0.33	0.18	0.41
Oleic 18:1	0.64	1.42	0.86	1.95	0.89	2.05	1.01	2.28
Linoleic 18:2	0.70	1.62	1.13	2.67	1.29	3.00	1.30	2.91
Linolenic 18:3	0.09	0.22	0.15	0.36	0.17	0.40	0.18	0.40
Total Fat Intake	1.99	4.28	2.89	6.51	3.20	7.30	3.42	7.62

Table 9-F. Target Foods: Current daily intake of total fat and five fatty acids (palmitic, stearic, oleic, linoleic, and linolenic), *per user* mean and 90th percentile, US Females (% Energy)

Fatty Acids	Females 1-8 yrs		Females 9-19 yrs		Females 20-49 yrs		Females 50+yrs	
	Mean	90th percentile	Mean	90th percentile	Mean	90th percentile	Mean	90th percentile
Palmitic 16:0	0.27	0.67	0.40	0.96	0.46	1.15	0.46	1.02
Stearic 18:0	0.13	0.28	0.17	0.41	0.19	0.47	0.21	0.46
Oleic 18:1	0.72	1.88	1.08	2.78	1.16	2.58	1.21	2.81
Linoleic 18:2	0.82	2.20	1.37	3.55	1.55	3.92	1.53	3.54
Linolenic 18:3	0.11	0.28	0.18	0.47	0.21	0.55	0.21	0.49
Total Fat Intake	2.25	5.64	3.51	8.53	3.98	9.42	4.01	8.86

Table 10-A. Total Diet: Current daily intake of total fat and five fatty acids (palmitic, stearic, oleic, linoleic, and linolenic), US population (g/day)

Fatty Acids	Mean (g/day)	90th percentile (g/day)
Palmitic 16:0	14.38	23.62
Stearic 18:0	6.96	11.75
Oleic 18:1	27.34	45.20
Linoleic 18:2	14.75	25.66
Linolenic 18:3	1.42	2.49
Total Fat Intake	79.58	129.40

Table 10-B. Total Diet: Current *per capita* daily intake of total fat and five fatty acids (palmitic, stearic, oleic, linoleic and linolenic), US Males (g/day)

Fatty Acids	Males 1-8 yrs		Males 9-19 yrs		Males 20-49 yrs		Males 50+ yrs	
	Mean	90th percentile	Mean	90th percentile	Mean	90th percentile	Mean	90th percentile
Palmitic 16:0	12.30	18.87	17.38	26.25	18.75	29.60	15.51	24.78
Stearic 18:0	5.91	9.30	8.51	13.07	9.08	14.30	7.52	12.13
Oleic 18:1	22.07	33.13	32.27	50.88	35.65	53.45	30.54	49.51
Linoleic 18:2	10.70	17.77	16.32	27.27	18.76	30.69	16.76	29.07
Linolenic 18:3	0.99	1.63	1.46	2.46	1.77	2.96	1.64	2.83
Total Fat Intake	64.76	100.50	93.44	142.10	102.90	155.60	87.93	139.80

Table 10-C. Total Diet: Current *per capita* daily intake of total fat and five fatty acids (palmitic, stearic, oleic, linoleic and linolenic), US Females (g/day)

Fatty Acids	Females 1-8 yrs		Females 9-19 yrs		Females 20-49 yrs		Females 50+yrs	
	Mean	90th percentile	Mean	90th percentile	Mean	90th percentile	Mean	90th percentile
Palmitic 16:0	11.59	17.49	13.42	20.61	13.16	20.59	11.01	17.65
Stearic 18:0	5.59	8.47	6.55	10.09	6.36	10.25	5.35	8.64
Oleic 18:1	20.75	31.64	24.83	38.13	25.08	40.32	21.53	34.71
Linoleic 18:2	10.04	16.95	13.44	22.55	14.10	23.36	12.53	21.81
Linolenic 18:3	0.97	1.54	1.24	2.07	1.39	2.35	1.31	2.29
Total Fat Intake	60.85	91.47	72.86	111.60	73.64	114.20	63.29	100.40

Table 11-A. Total Diet: Current *per capita* daily intake of total fat and five fatty acids (palmitic, stearic, oleic, linoleic, and linolenic), US population (% Energy)

Fatty Acids	Mean (% Energy)	90th percentile (% Energy)
Palmitic 16:0	6.07	8.00
Stearic 18:0	2.91	3.94
Oleic 18:1	11.49	15.16
Linoleic 18:2	6.23	9.22
Linolenic 18:3	0.61	0.95
Total Fat Intake	33.61	42.88

Table 11-B. Total Diet: Current *per capita* daily intake of total fat and five fatty acids (palmitic, stearic, oleic, linoleic and linolenic), US Males (% Energy)

Fatty Acids	Males 1-8 yrs		Males 9-19 yrs		Males 20-49 yrs		Males 50+ yrs	
	Mean	90th percentile	Mean	90th percentile	Mean	90th percentile	Mean	90th percentile
Palmitic 16:0	6.18	7.93	6.23	7.82	6.04	7.95	6.16	8.23
Stearic 18:0	2.94	3.80	3.04	3.92	2.91	3.92	2.98	4.08
Oleic 18:1	10.96	13.87	11.54	14.66	11.47	15.09	12.02	16.13
Linoleic 18:2	5.25	7.29	5.78	8.17	6.08	9.09	6.56	9.60
Linolenic 18:3	0.50	0.71	0.52	0.75	0.57	0.88	0.65	0.98
Total Fat Intake	32.30	39.66	33.39	41.06	33.18	42.13	34.75	44.19

Table 11-C. Total Diet: Current *per capita* daily intake of total fat and five fatty acids (palmitic, stearic, oleic, linoleic and linolenic), US Females (% Energy)

Fatty Acids	Females 1-8 yrs		Females 9-19 yrs		Females 20-49 yrs		Females 50+ yrs	
	Mean	90th percentile	Mean	90th percentile	Mean	90th percentile	Mean	90th percentile
Palmitic 16:0	6.29	7.99	6.15	7.88	6.01	8.06	5.94	7.98
Stearic 18:0	3.01	3.90	3.00	3.96	2.89	3.98	2.88	3.94
Oleic 18:1	11.13	14.24	11.35	14.68	11.43	15.25	11.49	15.29
Linoleic 18:2	5.35	7.61	6.10	9.04	6.49	9.59	6.69	9.85
Linolenic 18:3	0.53	0.76	0.56	0.87	0.65	1.03	0.71	1.07
Total Fat Intake	32.84	40.29	33.32	41.74	33.71	44.12	34.02	43.74

Table 12-A. Fatty Acid Intake from Total Diet, Pre and Post MON 87705, US population (g/day)

Fatty Acids	Mean Per Capita			90 th Percentile Per User		
	Pre-MON 87705 (g/day)	% change Post- MON 87705	Post-MON 87705 (g/day)	Pre-MON 87705 (g/day)	% change Post- MON 87705	Post- MON 87705 (g/day)
Palmitic 16:0	14.38	-3.80	13.83	23.62	-9.00	21.48
Stearic 18:0	6.96	0.30	6.98	11.75	0.80	11.84
Oleic 18:1	27.34	10.80	30.29	45.20	27.20	57.52
Linoleic 18:2	14.75	-4.30	14.12	25.66	-10.10	23.08
Linolenic 18:3	1.42	0.20	1.42	2.49	0.20	2.50
Total Fat Intake	79.58	0.00	79.58	129.40	0.00	129.40

Table 12-B. Fatty Acid Intake from Total Diet, Pre and Post MON 87705, US Population (% Energy)

Fatty Acids	Mean Per Capita			90 th Percentile Per User		
	Pre- MON 87705 (% Energy)	% change Post- MON 87705	Post- MON 87705 (% Energy)	Pre- MON 87705 (% Energy)	% change Post- MON 87705	Post- MON 87705 (% Energy)
Palmitic 16:0	6.07	-3.70	5.84	8.00	-11.30	7.10
Stearic 18:0	2.91	0.00	2.91	3.94	2.40	4.03
Oleic 18:1	11.49	10.90	12.75	15.16	33.80	20.28
Linoleic 18:2	6.23	-4.40	5.96	9.22	-12.70	8.05
Linolenic 18:3	0.61	0.00	0.61	0.95	0.80	0.96
Total Fat Intake	33.61	0.00	33.61	42.88	0.00	42.88

Table 13- A. Mean *Per Capita* Fatty Acid Intake from Total Diet, Pre and Post MON 87705 Replacement, US Males

Fatty Acids	Males 1-8 (g/day)		Males 9-19 (g/day)		Males 20-49 (g/day)		Males 50+ (g/day)	
	Pre	Post	Pre	Post	Pre	Post	Pre	Post
Palmitic 16:0	12.30	12.09	17.38	16.95	18.75	18.08	15.51	14.82
Stearic 18:0	5.91	5.95	8.51	8.54	9.08	9.10	7.52	7.56
Oleic 18:1	22.07	23.07	32.27	34.47	35.65	39.27	30.54	34.33
Linoleic 18:2	10.70	10.48	16.32	15.87	18.76	18.02	16.76	15.92
Linolenic 18:3	0.99	1.00	1.46	1.46	1.77	1.77	1.64	1.64
Total Fat Intake	64.76	64.76	93.44	93.45	102.90	102.91	87.93	87.93
Fatty Acids	Males 1-8 (%Energy)		Males 9-19 (%Energy)		Males 20-49 (%Energy)		Males 50+ (%Energy)	
	Pre	Post	Pre	Post	Pre	Post	Pre	Post
Palmitic 16:0	6.18	6.08	6.23	6.07	6.04	5.82	6.16	5.89
Stearic 18:0	2.94	2.96	3.04	3.05	2.91	2.91	2.98	3.00
Oleic 18:1	10.96	11.44	11.54	12.30	11.47	12.66	12.02	13.52
Linoleic 18:2	5.25	5.15	5.78	5.62	6.08	5.84	6.56	6.23
Linolenic 18:3	0.50	0.50	0.52	0.52	0.57	0.57	0.65	0.65
Total Fat Intake	32.30	32.30	33.39	33.39	33.18	33.18	34.75	34.75

Table 13-B. Mean *Per Capita* Fatty Acid Intake from Total Diet, Pre and Post MON 87705 Replacement, US Females

Fatty Acids	Females 1-8 (g/day)		Females 9-19 (g/day)		Females 20-49 (g/day)		Females 50+ (g/day)	
	Pre	Post	Pre	Post	Pre	Post	Pre	Post
Palmitic 16:0	11.59	11.36	13.42	12.96	13.16	12.57	11.01	10.43
Stearic 18:0	5.59	5.62	6.55	6.57	6.36	6.39	5.35	5.38
Oleic 18:1	20.75	21.84	24.83	27.22	25.08	28.27	21.53	24.76
Linoleic 18:2	10.04	9.80	13.44	12.92	14.10	13.40	12.53	11.80
Linolenic 18:3	0.97	0.97	1.24	1.24	1.39	1.39	1.31	1.31
Total Fat Intake	60.85	60.85	72.86	72.86	73.64	73.65	63.29	63.30
Fatty Acids	Females 1-8 (%Energy)		Females 9-19 (%Energy)		Females 20-49 (%Energy)		Females 50+ (%Energy)	
	Pre	Post	Pre	Post	Pre	Post	Pre	Post
Palmitic 16:0	6.29	6.17	6.15	5.94	6.01	5.73	5.94	5.63
Stearic 18:0	3.01	3.03	3.00	3.00	2.89	2.90	2.88	2.89
Oleic 18:1	11.13	11.71	11.35	12.42	11.43	12.96	11.49	13.24
Linoleic 18:2	5.35	5.23	6.10	5.87	6.49	6.15	6.69	6.29
Linolenic 18:3	0.53	0.53	0.56	0.56	0.65	0.65	0.71	0.71
Total Fat Intake	32.84	32.84	33.32	33.32	33.71	33.71	34.02	34.03

Table 14-A. 90th Percentile *Per User* Fatty Acid Intake from Total Diet, Pre and Post MON 87705 Replacement, US Males

Fatty Acids	Males 1-8 (g/day)		Males 9-19 (g/day)		Males 20-49 (g/day)		Males 50+ (g/day)	
	Pre	Post	Pre	Post	Pre	Post	Pre	Post
Palmitic 16:0	18.87	17.73	26.25	24.38	29.60	26.78	24.78	22.57
Stearic 18:0	9.30	9.40	13.07	13.45	14.30	14.44	12.13	12.27
Oleic 18:1	33.13	38.23	50.88	61.62	53.45	68.31	49.51	62.39
Linoleic 18:2	17.77	16.54	27.27	24.93	30.69	27.48	29.07	26.17
Linolenic 18:3	1.63	1.63	2.46	2.48	2.96	2.97	2.83	2.83
Total Fat Intake	100.50	100.53	142.10	142.14	155.60	155.60	139.80	139.74
Fatty Acids	Males 1-8 (%Energy)		Males 9-19 (%Energy)		Males 20-49 (%Energy)		Males 50+ (%Energy)	
	Pre	Post	Pre	Post	Pre	Post	Pre	Post
Palmitic 16:0	7.93	7.49	7.82	7.07	7.95	7.05	8.23	7.32
Stearic 18:0	3.80	3.91	3.92	4.04	3.92	3.93	4.08	4.13
Oleic 18:1	13.87	16.06	14.66	18.67	15.09	20.01	16.13	21.27
Linoleic 18:2	7.29	6.76	8.17	7.26	9.09	7.99	9.60	8.41
Linolenic 18:3	0.71	0.72	0.75	0.76	0.88	0.88	0.98	0.98
Total Fat Intake	39.66	39.62	41.06	41.04	42.13	42.13	44.19	44.18

Table 14-B. 90th Percentile *Per User* Fatty Acid Intake from Total Diet, Pre and Post MON 87705 Replacement, US Females

Fatty Acids	Females 1-8 (g/day)		Females 9-19 (g/day)		Females 20-49 (g/day)		Females 50+ (g/day)	
	Pre	Post	Pre	Post	Pre	Post	Pre	Post
Palmitic 16:0	17.49	16.47	20.61	18.71	20.59	18.48	17.65	15.75
Stearic 18:0	8.47	8.71	10.09	10.24	10.25	10.26	8.64	8.75
Oleic 18:1	31.64	36.82	38.13	48.62	40.32	52.51	34.71	45.77
Linoleic 18:2	16.95	15.75	22.55	20.25	23.36	20.70	21.81	19.21
Linolenic 18:3	1.54	1.55	2.07	2.08	2.35	2.35	2.29	2.29
Total Fat Intake	91.47	91.46	111.60	111.56	114.20	114.17	100.40	100.54
Fatty Acids	Females 1-8 (%Energy)		Females 9-19 (%Energy)		Females 20-49 (%Energy)		Females 50+ (%Energy)	
	Pre	Post	Pre	Post	Pre	Post	Pre	Post
Palmitic 16:0	7.99	7.49	7.88	7.02	8.06	6.99	7.98	7.00
Stearic 18:0	3.90	3.98	3.96	4.02	3.98	4.01	3.94	4.00
Oleic 18:1	14.24	16.76	14.68	19.58	15.25	21.03	15.29	20.80
Linoleic 18:2	7.61	7.01	9.04	7.94	9.59	8.19	9.85	8.48
Linolenic 18:3	0.76	0.77	0.87	0.88	1.03	1.03	1.07	1.08
Total Fat Intake	40.29	40.31	41.74	41.73	44.12	44.15	43.74	43.75

Appendix A. Baseline Fatty Acid Profiles for the Soybean Oil Components of Target Food Groups

The baseline FA profile for the soybean oil component of the 4 target food groups were previously developed in conjunction with Monsanto in 2006. Upon review and input from Monsanto in April 2009 the baseline information were updated and the baseline FA profile in Table A-1 were developed for this study.

Table A-1. Baseline FA Profile, April 2009

Description	16:0	18:0	18:1C	18:2N6	18:3N3	tfat	total	Reference	Comments
Liquid Soybean Oil	10.6	3.8	23	51.8	6.7	0.0	96	ISEO, 2006 report values adjust for 0.96 Fat conversion factor	Use ISEO reference for consistency with Vistive analysis
Margarine - stick (including margarine in mashed potatoes)	10.7	6.7	30.0	15.0	1.5	30.4	94	USDA TFADB #88	Adjust MON 87705 profile based on % of total fat that LSBO being replaced
Margarine - light	10.7	6.7	30.0	15.0	1.5	30.4	94		
Tub	10.6	3.8	23	51.8	6.7	0	96	ISEO, 2006 report values adjust for 0.96 Fat conversion factor	Most soft tub are legally 0 trans fat , <0.05% (personal communication, Monsanto April 2009) Assumed 100% liquid SBO as in Vistive analysis
Mayonnaise and miracle whip	9.9	3.6	24.9	45.4	5.9	0	90	USDA TFADB #105; change t-fat to zero	trans-fat to zero (personal communication with Monsanto, April 09)

Center for Chemical Regulation and Food Safety
Food Safety and Nutrition

Creamy salad dressings	10.6	3.8	23	51.8	6.7	0	96	ISEO, 2006 report values adjust for 0.96 Fat conversion factor	Assumed 100% liquid SBO as in Vistive analysis (personal communication with Monsanto, April 09)
Oil and vinegar based salad dressings	10.6	3.8	23	51.8	6.7	0	96		
Creamy salad dressings (low cal)	9.9	3.7	21.7	37.4	6.8	0.5	80	Avg of TFADB #107,108,110	
Oil and vinegar based salad dressings (low cal)	9.9	3.7	21.7	37.4	6.8	0.5	80		

Table A-2. Source of Baseline Oil FA profile -- Institute of Shortening and Edible Oils (ISEO), 9th Edition 2006

TABLE VII
TYPICAL FATTY ACID COMPOSITION OF THE PRINCIPAL VEGETABLE
AND ANIMAL FATS AND OILS IN THE U.S.¹
(% of total fatty acids)

	BUTYRIC	CAPROIC	CAPRYLIC	CAPRIC	LAURIC	MYRISTIC	PENTADECANOIC	PALMITIC	MARGARIC	STEARIC	ARACHIDIC	BEHENIC	LIGNOCERIC	MYRISTOLEIC	PALMITOLEIC	OLEIC	MARGAROLEIC	GADOLEIC	LINOLEIC	LINOLENIC
	SATURATED													MONO-UNSATURATED					POLY-UNSATURATED	
<i>Oil or Fat</i>	4:0	6:0	8:0	10:0	12:0	14:0	15:0	16:0	17:0	18:0	20:0	22:0	24:0	14:1	16:1	18:1	17:1	20:1	18:2	18:3
Beef tallow						3	1	24	2	19				1	4	43	1		3	1
Butterfat	4	2	1	3	3	11	2	27	1	12					2	29			2	1
Canola								4		2						62			22	10
Cocoa butter								26		34	1					34			3	
Coconut		1	8	6	47	18		9		3						6			2	
Corn								11		2						28			58	1
Cottonseed						1		22		3					1	19			54	1
High oleic canola								4		2						75			17	2
High oleic safflower								7		2						78			13	
High oleic sunflower								4		5						79			11	
Lard						2		26		14					3	44		1	10	
Mid oleic sunflower								4		5						65			26	
Olive								13		3	1				1	71			10	1
Palm kernel			3	4	48	16		8		3						15			2	
Palm						1		45		4						40			10	
Peanut								11		2	1	3	2			48		2	32	
Safflower								7		2						13			78	
Soybean								11		4						24			54	7
Sunflower								7		5						19			68	1

¹Fatty acid composition data determined by gas-liquid chromatography and provided by member companies of the Institute of Shortening and Edible Oils.

Fatty acids (designated as number of carbon atoms: number of double bonds) occurring in trace amounts are excluded. Component fatty acids may not add to 100% due to rounding.

Appendix B. Foods Targeted for Replacement

Margarine (light, stick, tub/spread)

NH0306 Food code	Food Description
715	White potatoes, mashed, stuff, puffs
81101500	Light butter, stick, salted
81101520	Light butter, whipped, tub, salted
81102000	Margarine, NFS
81102010	Margarine, stick, salted
81102020	Margarine, tub, salted
81102030	Margarine, liquid, salted
81103020	Margarine, whipped, tub, salted
81103030	Margarine, stick, unsalted
81103040	Margarine-like spread, stick, salted
81103041	Margarine-like spread, made with yogurt, stick, salted
81103060	Margarine, tub, unsalted
81103080	Margarine-like spread, tub, salted
81103090	Margarine-like spread, liquid, salted
81103120	Margarine-like spread, tub, unsalted
81103130	Margarine-like spread, whipped, tub, salted
81103140	Margarine-like spread, tub, sweetened
81104010	Margarine-like spread, reduced calorie, about 40% fat, tub, salted
81104011	Margarine-like spread, reduced calorie, about 40% fat, made with yogurt, tub, salted
81104020	Margarine-like spread, reduced calorie, about 40% fat, stick, salted
81104050	Margarine-like spread, reduced calorie, about 20% fat, tub, salted
81104070	Margarine-like spread, reduced calorie, about 20% fat, tub, unsalted
81104100	Margarine-like spread, fat free, tub, salted
81104110	Margarine-like spread, fat free, liquid, salted
81104550	Vegetable oil-butter spread, reduced calorie, stick, salted
81105010	Butter-margarine blend, stick, salted
81105020	Butter-margarine blend, tub, salted
81106010	Butter replacement, fat-free powder

Creamy Salad Dressing

NH0306 Food code	Food Description
83100100	Salad dressing, NFS
83101000	Blue or roquefort cheese dressing
83101500	Bacon dressing (hot)
83101600	Bacon and tomato dressing
83102000	Caesar dressing
83103000	Coleslaw dressing

Center for Chemical Regulation and Food Safety
Food Safety and Nutrition

83104000	French dressing
83105500	Honey mustard dressing
83109000	Russian dressing
83112000	Green Goddess dressing
83112500	Creamy dressing, made with sour cream and/or buttermilk and oil
83112600	Cream cheese dressing
83114000	Thousand Island dressing
83115000	Yogurt dressing
83200100	Salad dressing, low-calorie, NFS
83201000	Blue or roquefort cheese dressing, low-calorie
83201050	Blue or roquefort cheese dressing, reduced calorie
83201200	Blue or roquefort cheese dressing, reduced calorie, fat-free, cholesterol-free
83202000	French dressing, low-calorie
83202010	French dressing, reduced calorie, fat-free, cholesterol-free
83202020	French dressing, reduced calorie
83203000	Caesar dressing, low-calorie
83204500	Honey mustard dressing, reduced calorie
83206000	Russian dressing, low-calorie
83207000	Thousand Island dressing, low-calorie
83207100	Thousand Island dressing, reduced calorie, fat-free, cholesterol-free
83210000	Creamy dressing, made with sour cream and/or buttermilk and oil, diet, NS as to low or reduced calorie
83210100	Creamy dressing, made with sour cream and/or buttermilk and oil, reduced calorie
83210200	Creamy dressing, made with sour cream and/or buttermilk and oil, reduced calorie, fat-free, cholesterol-free
83210250	Creamy dressing, made with sour cream and/or buttermilk and oil, reduced calorie, cholesterol-free

Oil and Vinegar Salad Dressing

NH0306 Food code	Food Description
83105100	Fruit dressing, made with honey, oil, and water
83106000	Italian dressing, made with vinegar and oil
83112900	Milk, vinegar, and sugar dressing
83112950	Poppy seed dressing
83112960	Peppercorn Dressing
83112980	Celery seed dressing
83112990	Sesame dressing
83113000	Sweet and sour dressing
83205000	Italian dressing, low calorie
83205450	Italian dressing, reduced calorie
83205500	Italian dressing, reduced calorie, fat-free

Center for Chemical Regulation and Food Safety
Food Safety and Nutrition

83208000	Vinegar, sugar, and water dressing
83220000	Salad dressing, low calorie, oil-free

Mayonaisse

NH0306 Food code	Food Description
83107000	Mayonaisse, regular
83107200	Mayonaisse, made with tofu
83108000	Mayonaisse, imitation
83108100	Mayonaisse, imitation, cholesterol free
83110000	Mayonaisse-type salad dressing
83110010	Mayonaisse-type salad dressing, cholesterol-free
83203250	Mayonaisse-type salad dressing, fat-free
83204000	Mayonaisse, low-calorie or diet
83204020	Mayonaisse, reduced calorie or diet, cholesterol-free
83204050	Mayonaisse-type salad dressing, low-calorie or diet
83204060	Mayonaisse-type salad dressing, low-calorie or diet, cholesterol-free

Soybean Oil

NH0306 Food code	Food Description
82101000	Vegetable oil, NFS
82108000	Soybean oil