



Title: Lipoprotein-Modifying Effects of Omega-3 Fatty Acids Ethyl Esters Analyzed by High Performance Liquid Chromatography in Patients with Hypertriglyceridemia (LOTUS)

NCT Number: NCT02839902

Statistical analysis plan Approve Date: 31-Oct-2017

Certain information within this statistical analysis plan has been redacted (ie, specific content is masked irreversibly from view with a black/blue bar) to protect either personally identifiable information or company confidential information.

This may include, but is not limited to, redaction of the following:

- Named persons or organizations associated with the study.
- Patient identifiers within the text, tables, or figures or in by-patient data listings.
- Proprietary information, such as scales or coding systems, which are considered confidential information under prior agreements with license holder.
- Other information as needed to protect confidentiality of Takeda or partners, personal information, or to otherwise protect the integrity of the clinical study.

If needed, certain appendices that contain a large volume of personally identifiable information or company confidential information may be removed in their entirety if it is considered that they do not add substantially to the interpretation of the data (eg, appendix of investigator's curriculum vitae).

Note; This document was translated into English as the language on original version was Japanese.

**Lipoprotein-Modifying Effects of Omega-3 Fatty Acids Ethyl Esters
Analyzed by High Performance Liquid Chromatography in Patients
with Hypertriglyceridemia (LOTUS)**

(Protocol number:TAK-085-4002)

Statistical Analysis Plan

(Ver.2.0:31OCT2017)

Sponsor: Takeda Pharmaceutical Company Limited

Authorizer:

PPD



Takeda Pharmaceutical Company Limited

PPD



Biostatistics Manager:

PPD



PPD



Contents

1	DEFINITIONS of TERMS	1
2	TIME WINDOW	1
3	ANALYSIS SET	1
4	CONSIDERATIONS for ANALYSIS	1
5	OTHER DATA HANDLING	2
6	SUBJECTS, DEMOGRAPHIC and OTHER BASELINE CHARACTERISTICS	3
6.1	Subject Disposition	3
6.2	Demographics and Other Baseline Characteristics	5
6.3	Compliance	7
7	EFFICACY EVALUATIONS	8
7.1	Primary Endpoint and the Analytical Methods	8
7.2	Secondary Endpoints and the Analytical Methods	9
7.3	Other Analyses	9
8	SAFETY EVALUATION	9
8.1	Frequency of Adverse Event Occurrence	9
8.2	Vital Signs and Laboratory Test	12
9	LISTING	13
10	CONSIDERATIONS on STATISTICAL ANALYSIS	13
10.1	Adjustments for Covariates	13
10.2	Handling of Dropouts or Missing Data	13
10.3	Criteria for Interim Analysis and Early Discontinuation	13
10.4	Multicenter Studies	13
10.5	Multiple Comparisons/Multiplicity	13
10.6	Subgroup Analysis	13
11	REVISION HISTORY	15
	Appendix 1 Details of Analysis Variables	17

1 DEFINITIONS of TERMS

- Summary Statistics: Number of subjects, mean, standard deviation, maximum values, minimum values, and quartiles.
- Treatment Group: Treated with Omega-3 FAE, Not treated with Omega-3 FAE

2 TIME WINDOW

For each assessment, observation and evaluation item, evaluable data is selected according to the following table. When there are multiple data exist within a time window, the one with the closest date to the reference date is adopted, and if the differences from the reference date are the same for multiple data, the later one is adopted.

< Vital Sign, Laboratory Tests, Lipoprotein Fraction >

Time Point	Reference Date	Time Allowance
		Number of Study Days
Week 0	-1	-15~-1
Week 4	28	14~41
Week 8	56	42~70

*Treated with Omega-3 FAE: The day before study drug administration is indicated as “Day -1” and “Day 1” for the administration day.

Not Treated with Omega-3 FAE: The day of visit at Week 0 is indicated as “Day -1” and “Day 1” for the next day after the visit.

3 ANALYSIS SET

- Full Analysis Set
The subjects who were randomized and given at least one dose of the study drug.
- Safety Analysis Set
The subjects who are given at least one dose of the study drug.

4 CONSIDERATIONS for ANALYSIS

- Significance level, Confidence coefficient
Significance level of 5%(2-sided) will be used for analysis.
Confidence coefficient of 95% (2-sided) will be used for all confidence intervals.
- Display digit
[Mean, Confidence coefficient, Quartiles]
Round to the one digits lower than significant digits of the data.

[Standard Deviation]

Round to the 2 digits lower than significant digits of the data.

[Minimum and Maximum Values]

Display the data at the significant digits.

[Proportion, Percentage]

Round to the one decimal place.

[P-value]

Round down to four decimal places. If p-value is less than 0.0001, display “p<0.0001”

5 OTHER DATA HANDLING

[Data Handling for Study Drug]

- Duration of Treatment(Treated with Omega-3 FAE)

Duration of Treatment = Date of the Last Dose – Date of the First Dose + 1

[Data Handling for Duration of Hyperlipidemia]

- Duration of hyperlipidemia (year)

Duration of hyperlipidemia (year) = (Date of first dose (year/month) – Onset/Diagnosis

Date of hyperlipidemia (year/month)) / 12 (rounded off to two decimal places)

If only the month of the onset of hyperlipidemia is unknown, the month of the onset of hyperlipidemia is regarded as “January”.

[Data Handling for Below (or Above) the limit of Quantification]

- Efficacy Data

(Laboratory Test (except Total Cholesterol, TG, HDL-C) and Lipoprotein Fraction)

Below (or equal to) the limit of Quantification: Lower Limit of Quantification to be replaced.

Above (or equal to) the limit of Quantification: Upper Limit of Quantification to be replaced.

- Safety Data

(Vital Sign and Laboratory Test (Total Cholesterol, TG, HDL-C))

Below (or equal to) the limit of Quantification: 0 to be replaced.

Above (or equal to) the limit of Quantification: Upper Limit of Quantification to be replaced.

[Data Handling for Adverse Event]

- An adverse event is defined as any untoward medical occurrence in a patient or a subject receiving a pharmaceutical product (including the study drug). It does not necessarily have an apparent causal relationship with this pharmaceutical product (including study drug). A treatment-emergent AE (TEAE) is defined as an AE which occurs after taking the first dose of trial medication.
The first dose date of “Not treated with Omega-3 FAE” is defined as the next day of the visit in Week 0.
- Time to first Onset
Time to first Onset=AE Start date - The first dose date + 1
- Related AE
AE is classified into Related/Not Related only for Treated with Omega-3 FAE group
- Non-Serious TEAEs
Non-Serious TEAE is defined as Non-Serious TEAEs of at least 5% in any treatment group by SOC and PT.

[Laboratory Test]

- (EPA+DHA)/AA Ratio
(Eicosapentaenoic Acid + Docosahexaenoic Acid)/ Arachidonic Acid
- DHA/AA Ratio
Docosahexaenoic Acid / Arachidonic Acid
- non-HDL
Total Cholesterol - HDL-C

6 SUBJECTS, DEMOGRAPHIC and OTHER BASELINE CHARACTERISTICS

6.1 Subject Disposition

6.1.1 Study Information

Analysis Set: All subjects who were obtained informed consent

Analysis Variables: The earliest date of informed consent

The latest date of the last date of administration

MedDRA Version

SAS Version

Analysis Methods: For the above analysis items, the following analysis will be performed.

- (1) Show the above items.

The latest date of the last date of administration will be presented only for treated with Omega-3 FAE.

6.1.2 Eligibility of Subjects

Analysis Set: All subjects who were obtained informed consent

Analysis Variables: Randomization into the treatment period of the study

[Yes, No (and the reason)]

Analysis Methods: For the above analysis items, the following analysis will be performed.

- (1) Summary of frequency distribution

6.1.3 Disposition of Subjects

6.1.3.1 Status at the End of Study

Analysis Set: Randomized subjects

Analysis Variables: Status at the end of study

[Complete, Incomplete (and the reason)]

Analysis Methods: For the above analysis items, the following analysis will be performed for each treatment group and all subjects in the analysis set.

- (1) Summary of frequency distribution

6.1.4 Protocol Deviations and Analysis Datasets

6.1.4.1 Protocol Deviations

Analysis Set: Randomized subjects

Analysis Variables: Protocol Deviations

[Major GCP Violations, Deviations of Protocol Entry Criteria, Deviations of Discontinuation Criteria, Deviations Related to Treatment Procedure or Dose, Deviations Concerning Excluded Medication or Therapy, Deviations to Avoid Emergency Risk, Other Deviations]

Analysis Methods: For the above analysis items, the following analysis will be performed for each treatment group and all subjects in the analysis set.

- (1) Frequency distribution

Summarize the number of subjects who have deviated from the protocol, classify the deviations into above category, and show the breakdown of deviations. Subjects applicable for multiple categories will be counted once in each category.

6.1.4.2 Datasets Analyzed

Analysis Set: Randomized subjects

Analysis Variables: Full Analysis Set [Inclusion, Exclusion]

Safety Analysis Set [Inclusion, Exclusion]

Analysis Methods: For the above analysis items, the following analysis will be performed for each treatment group and all subjects in the analysis set.

(1) Summary of frequency distribution

6.2 Demographics and Other Baseline Characteristics

6.2.1 Distribution of Demographics Items

Analysis Set; Safety Analysis Set, Full Analysis Set

Analysis Variables:

Age(Week -4)(years) [Min<= - <65, 65<=Max]

Age (Week 0) (years) [Min<= - <65, 65<=Max]

Gender [Male, Female]

Height (Week -4) (cm) [Min<= - <150, 150<= - <160,
160<= - <170, 170<= - <=Max]

Weight (Week -4) (kg)
[Min<= - <50.0, 50.0<= - <60.0,
60.0<= - <70.0, 70.0<= - <80.0,
80.0<= - <=Max]

BMI(Week -4)(kg/m²)[Min<= - <18.5, 18.5<= - <25.0
25.0<= - <=Max]

Duration of Hyperlipidemia (years) [Min<5, 5<=Max]

Frequency of Fish Intake [Almost Every Day, About Every Two Days,
About Once or Twice Per Week, Rarely]

Smoking Classification [Never Smoked, Current Smoker, Ex-Smoker]

Drink Alcohol Almost Every Day? [Yes, No]

Fasting Triglycerides(Week -4)(mg/dL)
[Min<= - <300, 300<= - <=Max]

Fasting Triglycerides (Week 0)(mg/dL)
[Min<= - <300, 300<= - <=Max]

Cholesterol Concentration in sd LDL Fraction (Week 0)

Triglycerides Concentration in sd LDL Fraction (Week 0)

Free Cholesterol Concentration in sd LDL Fraction (Week 0)

Phospholipid Concentration in sd LDL Fraction (Week 0)
Particle Size (nm) of LDL (Cholesterol Monitor) (Week 0)
Particle Size (nm) of LDL (Triglycerides Monitor) (Week 0)
Particle Size (nm) of LDL (Free Cholesterol Monitor) (Week 0)
Particle Size (nm) of LDL (Phospholipid Monitor) (Week 0)

Analysis Methods: For the above analysis items, the following analysis will be performed for each treatment group and all subjects in the analysis set.

- (1) Summary of frequency distribution for discrete variables and summary statistics for continuous variables.

6.2.2 Medical History and Concurrent Medical Conditions

Analysis Set: Safety Analysis Set

Analysis Variables: Medical history, Concurrent medical conditions

Analysis Methods: For the above analysis items, the following analysis will be performed for each treatment group. Analysis variables will be coded using the MedDRA dictionary and be summarized into SOC and PT. SOC's will be sorted in alphabetical order, then PTs will be sorted in frequency order.

- (1) Medical history: Summary of frequency distribution by SOC/PT
- (2) Concurrent medical conditions: Summary of frequency distribution by SOC/PT

The method of accounting for the frequency is as follows.

[Number of subjects with AE]

For each summary, subjects with one or more events within a level of SOC term is counted only once in that level. Similarly, subjects with one or more events within a level of PT term is counted only once in that level.

6.2.3 Medication History and Concomitant Medications

Analysis Set: Safety Analysis Set

Analysis Variables:

HMG-CoA Reductase Inhibitor
Medication history

Concomitant medications

Analysis Methods: For the above analysis items, the following analysis will be performed for each treatment group. Analysis variables will be coded using the WHO (World Health Organization) Drug. Coded medications will be sorted in frequency order. Medications used more than once within a subject will be counted only once for the subject.

- (1) Summary of frequency distribution of HMG-CoA Reductase Inhibitor
- (2) Summary of frequency distribution of medication history
- (3) Summary of frequency distribution of concomitant medications that started and stopped prior to baseline
- (4) Concomitant medications that were ongoing at baseline and those that started after baseline

6.3 Compliance

6.3.1 Study Medication Compliance

Analysis Set: Safety Analysis Set

Analysis Variables: Study medication compliance (%)

[(Min<= - <50.0, 50.0<= - <=Max]

Time Point: Week 4, Week 8

Analysis Methods: For the above analysis items, the following analysis will be performed for treated with Omega FAE group by time point.

- (1) Summary of frequency distribution

6.3.2 Diet Compliance before Visit

Analysis Set: Safety Analysis Set

Analysis Variables: Any Alcohol from 9:00 PM on 2 days before or 9:00 PM on previous day to Fasting Test? [Yes, No]
Overeat or Overdrink or Extreme Diet Change on the day before fasting test? [Yes, No]

Time Point: Week 4, Week 8

Analysis Methods: For the above analysis items, the following analysis will be performed for each treatment group and all subjects in the analysis set by time point.

- (1) Summary of frequency distribution

6.3.3 Study Medication Exposure

Analysis Set: Safety Analysis Set

Analysis Variables: Duration of exposure (days),

[1<= - <29, 29<= - <57, 57<= - <=Max]

Analysis Methods: For the above analysis items, the following analysis will be performed for each treatment group and all subjects in the analysis set.

- (1) Summary of frequency distribution for categorical variables and summary statistics for continuous variables

7 EFFICACY EVALUATIONS

7.1 Primary Endpoint and the Analytical Methods

Analysis Set: Full Analysis Set

Analysis Variables: Change of sd LDL-C by Lipoprotein fraction and particle size of LDL

Time Point : Week 0, Week 4, Week 8

Stratified Variable: Fasting Triglycerides (Week -4)

[Min<= - <300, 300<= - <Max]

Age (Week -4) [Min<= - <65, 65<= - <Max]

Analysis Methods:

- (1) Summary statistics of observed value and 95% confidence interval for the mean will be calculated by treatment groups and time point. In addition, Mean (+/-SD) plots will be made by treatment group and time point. Mean differences and the 95% confidence interval (two-sided) will also be provided.
- (2) The same analyses described in (1) will be performed on percent change from baseline.
- (3) Subgroup analysis of observed value and percent change from baseline will be conducted by stratified variables described above. Summary statistics, 95% confidence interval for the mean, mean differences and the 95% confidence interval (two-sided) will be provided.
- (4) The same analyses described in (3) will be performed on percent change from baseline.

- (5) ANCOVA (analysis of covariance), with Fasting Triglycerides at week -4 (Min ≤ - <300, 300 ≤ - <Max), and Age at week -4 (Min ≤ - <65, 65 ≤ - <Max) as covariate, Treatment group as independent variable, will be applied to the data of percent change at Week 0 to Week 8. (alpha=0.05 through an ANCOVA strategy)

7.2 Secondary Endpoints and the Analytical Methods

Analysis Set: Full Analysis Set

Analysis Variables:

- (1) Change of lipid component by Lipoprotein Fraction in Major Lipid
- (2) Change of fatty acid in all lipid and sd LDL-C
- (3) Change of serum lipid, lipid concentration of apolipoprotein and lipoprotein and particle number of lipoprotein

* See appendix 1 for detail of items.

Time Point: Week 0, Week 4, Week 8

Stratified Variable: Fasting Triglycerides (Week -4)

[Min ≤ - <300, 300 ≤ - <Max]

Age (Week -4) [Min ≤ - <65, 65 ≤ - <Max]

Analysis Methods: The same analyses described in 7.1 will be performed on the Items described above.

For the Analysis variable 2), exploratory analysis will be performed about relationship between percent change from baseline of sd LDL at Week 8 and percent change from baseline of fatty acid in all lipid at Week 8.

7.3 Other Analyses

Analysis Set: Full Analysis Set

Analysis Variables: Lipoprotein Lipase, HS-CRP

Time Point: Week 0, Week 4, Week 8

Analysis Methods: The same analyses described in 7.1(1), (2) will be performed on the Items described above.

8 SAFETY EVALUATION

8.1 Frequency of Adverse Event Occurrence

8.1.1 Brief Summary of Adverse Events

Analysis Set: Safety Analysis Set

Analysis Variables: Adverse Event(Treatment-Emergent Adverse Events),
Non-Serious TEAEs

Category Classification:

Causal relationship with treatment drug [Related, Not related]

Severity [Mild, Moderate, Severe]

Time to onset [1<= - <29, 29<= - <57, 57<= - <=Max]

For the above analysis items, the following analyses of frequency distribution will be performed.

- 1) All TEAEs
- 2) Drug-related TEAEs
- 3) All TEAEs by severity
- 4) Drug-related TEAEs by severity.
- 5) TEAEs leading to discontinuation
- 6) Serious TEAEs
- 7) Drug-related serious TEAEs
- 8) Serious TEAEs leading to discontinuation
- 9) TEAEs leading to death
- 10) TEAEs by time to onset

Incidence rates will be calculated as following on each analysis.

[Number of Subjects]

- Frequency by Severity

Subjects with one or more adverse events within a level of MedDRA term is counted only once in that level using the most severe incident. The denominator when calculating the incidence of adverse events is the number of subjects of safety analysis set.

- Frequency by Time to Onset

Subjects with one or more adverse events within a level of MedDRA term is counted in each period. The denominator when calculating the incidence of adverse events is the subject that “Drug continued after the period” or “TEAE was occurred after the period”. The numerator is the subject that “TEAE occurred in the period”.

- Analyses Other Than the Above

Subjects with one or more adverse events within a level of MedDRA term is counted only once for that MedDRA term. The denominator when calculating the incidence of adverse events is the number of subjects of safety analysis set.

8.1.2 Display of TEAE

Analysis Set: Safety Analysis Set

Analysis Variables: TEAE

Category Classification:

Relationship with treatment drug [Related, Not Related]

Severity [Mild, Moderate, Severe]

Time to onset [1<= - <29, 29<= - <57, 57<= - <=Max]

Analysis Methods: For the above analysis items, the following analysis will be performed for each treatment group. Analysis variables will be coded using the MedDRA dictionary and be summarized into SOC and PT. SOC's will be sorted in alphabetical order, then PTs will be sorted in frequency order.

- 1) All TEAEs by SOC and PT
- 2) Drug-related TEAEs by SOC and PT
- 3) All TEAEs by severity by SOC and PT
- 4) Drug-related TEAEs by severity by SOC and PT
- 5) TEAEs leading to discontinuation by SOC and PT
- 6) Serious TEAEs by SOC and PT
- 7) Non-serious TEAEs of at least 5% in any group by SOC and PT
- 8) Drug-related serious TEAEs by SOC and PT
- 9) Serious TEAEs leading to discontinuation by SOC and PT
- 10) TEAEs leading to death
- 11) TEAEs by time to onset, SOC and PT.

Incidence rates will be calculated as following on each analysis.

[Number of Subjects]

- Frequency (by SOC/PT)

Within each summary, subjects with one or more adverse events within a level of SOC term is counted only once in that level. Similarly, subjects with one or more adverse events within a level of PT term is counted only once in that level. The denominator when calculating the incidence of adverse events is the number of subjects of safety analysis set.

- Frequency by Severity (by SOC/PT)

Subjects with one or more adverse events within a level of SOC/PT term is counted only once in that level using the most severe incident. The denominator when calculating the incidence of adverse events is the

number of subjects of safety analysis set.

- Frequency by Time to Onset

Subjects with one or more adverse events within a level of MedDRA term is counted in each period. The denominator when calculating the incidence of adverse events is the subject that “Drug continued after the period” or “TEAE was occurred after the period”. The numerator is the subject that “TEAE occurred in the period”.

8.2 Vital Signs and Laboratory Test

8.2.1 Vital Signs

Analysis Set: Safety Analysis Set

Analysis Variables: Sitting blood pressure (Systolic, Diastolic), Sitting Pulse (bpm)

Time Point: Week 0, Week 4, Week 8

Analysis Methods: For the above analysis items, the following analysis will be performed

- (1) Summary statistics for observed value will be calculated by Time point.

Line plot of individual data will also be provided.

- (2) The same analyses described in (1) will be performed on change (Week4 /8 –Week 0) from baseline.

8.2.2 Laboratory Test

Analysis Set: Safety Analysis Set

Analysis Variables: Hematology (Platelets)

Serum Chemistry(Total Cholesterol, TG, HDL-C, non-HDL ,
LDH, AST, ALT, ALP, γ -GTP, CK(CPK))

Category Classification: Classification by reference value

[Lower, Normal, High]

Time Point: Week 0, Week 4, Week 8

Analysis Methods: For the above analysis items, the following analysis will be performed

- (1) Summary statistics for observed value will be calculated by time point.

Line plot of individual data will also be provided.

- (2) The same analyses described in (1) will be performed on change (Week4 /8 –Week 0) from baseline.

- (3) Shift table will be reported by time point with classification above.

9 LISTING

Following lists will be create for randomized subjects

- Demographics
- Medical history
- Concurrent medical conditions
- Medication history
- Concomitant medications
- Compliance of drug exposure
- Discontinued subjects
- Vital Signs
- Laboratory Test (Lipoprotein fraction)
- Laboratory Test (Hematology, Serum chemistry)
- Laboratory Test (Apoprotein, Remnant lipoprotein)
- Laboratory Test (Fatty acid analysis of total serum lipids)
- Adverse Events

10 CONSIDERATIONS on STATISTICAL ANALYSIS

10.1 Adjustments for Covariates

ANCOVA will be performed on primary and secondary endpoints with Fasting triglycerides at week -4($\text{Min} \leq - < 300$, $300 \leq - \leq \text{Max}$), and Age at week -4($\text{Min} \leq - < 65$, $65 \leq \text{Max}$) as covariate. Details are described in 7.1(5) and 7.2.

10.2 Handling of Dropouts or Missing Data

Imputation will not be performed.

10.3 Criteria for Interim Analysis and Early Discontinuation

Interim analysis will not be performed.

10.4 Multicenter Studies

Analyses for consideration of centers will not be performed.

10.5 Multiple Comparisons/Multiplicity

It does not adjust multiplicity.

10.6 Subgroup Analysis

Subgroup analysis will be performed in 7.1 and 7.2.

11 REVISION HISTORY

Ver.	Date	Author	Revised Content	Reason for Revision
1	30NOV2016	PPD	First Edition	
2	31OCT2017	PPD	5.OTHER DATA HANDLING [Data Handling for Adverse Event] “Non-Serious TEAEs” and “Laboratory Test”	Additional items
			6.1.3.1.Status at the End of Study Analysis Variables: (Before) Status at the End of Study Drug (After) Status at the End of Study Analysis Methods: (Before) For the above analysis items, the following analysis will be performed only for Treated with Omega-3 FAE (After) For the above analysis items, the following analysis will be performed for each treatment group and all subjects in the analysis set.	Correction of errors

Ver.	Date	Author	Revised Content	Reason for Revision
			8.1.1.Brief Summary of Adverse Events Analysis Variables: (Before) Adverse Events (Treatment-Emergent Adverse Events) (After) Adverse Events (Treatment-Emergent Adverse Events), <u>Non-Serious TEAEs</u>	Additional items
			8.1.2.Display of TEAE Non-serious TEAEs of at least 5% in any group by SOC and PT	Additional items
			8.2.1.Vital Signs (3) Shift table, by using classification based on criteria, will be made at each time point (Week 4 or Week 8) from Week 0	Deleted the section in terms of meaning of Vital Signs in this Study
			8.2.2.Laboratory Test Analysis Variables: (Before) Serum Chemistry (LDH, AST, ALT, ALP, γ -GTP, CK(CPK)) (After) Serum Chemistry(Total Cholesterol, TG, HDL-C, non-HDL , LDH, AST, ALT, ALP, γ -GTP, CK((CPK))	Correction of errors
			Category Classification: Classification by reference value [Lower, Normal, High]	Additional items

Appendix 1 Details of Analysis Variables

Primary Efficacy Endpoint and Secondary Efficacy Endpoint in Protocol are described below in detail.

1. Efficacy Analysis

1.1 Primary Endpoint

1) Change of sd LDL-C by Lipoprotein fraction and particle size of LDL

(1) sd LDL-C by Lipoprotein Fraction

Cholesterol Concentration in sd LDL Fraction

Triglycerides Concentration in sd LDL Fraction

Free Cholesterol Concentration in sd LDL Fraction

Phospholipid Concentration in sd LDL Fraction

TG/Cholesterol ratio in sd LDL Fraction

(2) Particle Size of LDL

Particle Size of LDL (Cholesterol Monitor)

Particle Size of LDL (Triglycerides Monitor)

Particle Size of LDL (Free Cholesterol Monitor)

Particle Size of LDL (Phospholipid Monitor)

1.2 Secondary Endpoint

1) Change of Lipid component by Lipoprotein Fraction in Major Lipid

(1) Lipoprotein Fraction (CM)

Cholesterol Concentration in CM

TG Concentration in CM

Free Cholesterol in CM

Phospholipid Concentration in CM

(2) Lipoprotein Fraction in (VLDL)

Cholesterol Concentration in VLDL

TG Concentration in VLDL

Free Cholesterol in VLDL

Phospholipid Concentration in VLDL

(3) Lipoprotein Fraction (LDL)

Cholesterol Concentration in LDL

TG Concentration in LDL

Free Cholesterol in LDL

Phospholipid Concentration in LDL

(4) Lipoprotein Fraction (HDL)

Cholesterol Concentration in HDL
TG Concentration in HDL
Free Cholesterol in HDL
Phospholipid Concentration in HDL

2) Change of fatty acid in all lipid and sd LDL-C

(1) Fatty acid in all lipid

Lauric Acid
Myristic Acid
Myristoleic Acid
Palmitic Acid
Palmitoleic Acid
Stearic Acid
Oleic Acid
Linoleic Acid
Gamma-linolenic Acid
Linolenic Acid
Arachic Acid
Eicosenoic Acid
Eicosadienoic Acid
Eicosatrienoic Acid
Dihomo-gamma-linolenic Acid
Arachidonic Acid
Eicosapentaenoic Acid
Behenic Acid
Erucic Acid
Docosatetraenoic Acid
Docosapentaenoic Acid
Lignoceric Acid
Docosahexaenoic Acid
Nervonic Acid
T/T ratio
EPA/AA ratio
(EPA+DHA) /AA ratio
DHA/AA ratio

(2)sd LDL-C

* Exploratory analysis will be performed for the relationship between percent change from baseline of sd LDL at week8 and percent change from baseline of fatty acid in all lipid.

3) Change of serum lipid, lipid concentration of apolipoprotein and lipoprotein and particle number of lipoprotein

(1) Serum lipid

Total Cholesterol

TG

HDL-C (Direct)

non-HDL

(2)Apolipoprotein and Lipoprotein

Apolipoprotein A1

Apolipoprotein A2

Apolipoprotein B

Apolipoprotein B-48

Apolipoprotein B-100

Apolipoprotein C-II

Apolipoprotein C-III

Apolipoprotein C- II / C-III

Apolipoprotein E

RemL-C

(3) Particle Number of lipoprotein

Particle Number in CM Fraction

Particle Number in VLDL Fraction

Particle Number in LDL Fraction

Particle Number in HDL Fraction