THE ALSPAC STUDY

Father based Metabolomics results

Prepared by

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Documentation summarising the data available and the variable names.

Last updated for version 1a of the RELEASE file.

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Introduction

This documentation gives a summary of the variables available from the metabolomics assays and the methods by which they were processed.

Over 230 quantified metabolomic measures were obtained per sample of EDTA-plasma, using a 1D proton (1H) NMR spectroscopy-based platform described previously[1,2,3]. Briefly, 260 µL plasma and 260 µL sodium phosphate buffer (75 mM Na2HPO4, 0.08% sodium 3-(trimethylsilyl)propionate-2,2,3,3-d4, 0.04% sodium azide in 80%/20% H20/D2O, pH 7.4) were mixed and transferred to NMR tubes using an 8-channel, Varispan Janus liquid handling robot (PerkinElmer). NMR spectra were acquired using a Bruker Avance III HD 500MHz spectrometer with a room temperature 5mm, inverse triple resonance TXI probe and a Bruker Avance III HD 600MHz spectrometer equipped with a nitrogen-cooled triple resonance probe (CryoProbe Prodigy TCI). Both spectrometers were equipped with SampleJet auto-samplers with cooled (6°C) sample storage. Spectra were acquired using standardized parameters using three NMR experiments or 'molecular windows' to characterize lipoproteins, low molecular weight metabolites and lipids. Lipid spectra were acquired after a standardised lipid extraction procedure performed on each sample using a VIAFLO 96 channel electronic pipette (Integra Biosciences). Data pre-processing and quantification were as previously described[1,2,3].

[1] Soininen P, Kangas AJ, Würtz P, Tukiainen T, Tynkkynen T, Laatikainen R, Järvelin MR, Kähönen M, Lehtimäki T, Viikari J, Raitakari OT, Savolainen MJ, Ala-Korpela, M. High-throughput serum NMR metabonomics for cost-effective holistic studies on systemic metabolism. Analyst. 2009;134;1781-1785

[2] Inouye M, Kettunen J, Soininen P, Silander K, Ripatti S, Kumpula LS, Hämäläinen E, Jousilahti P, Kangas AJ, Männistö S, Savolainen MJ, Jula A, Leiviskä J, Palotie A, Salomaa V, Perola M, Ala-Korpela M, Peltonen L. Metabonomic, transciptomic, and genomic variation of a population cohort. Mol. Sys. Biol. 2010;6;441

[3] Soininen P, Kangas AJ, Würtz P, Suna T, Ala-Korpela M. Quantitative serum nuclear magnetic resonance metabolomics in cardiovascular epidemiology and genetics. Circ. Cardiovasc. Genet. 2015;8;192-206

Note that samples from the Focus on Father (FOF) clinic were fasting.

Data are available for 1681 Fathers who attended the FOF clinic. Table 1 provides a list of all variable names and labels which may assist users who will be making formal data requests. Distributions of variables as received from the lab (prior to ALSPAC labelling) are shown in Appendix 1.

Note also that there are two marker variables in this dataset which indicate high levels of pyruvate (High_Pyr_FOF) and ethanol (High_Eth_FOF), respectively. The high pyruvate marker variable is associated with the pyruvate measure (Pyr_FOF), while the ethanol marker is at the end of the dataset as it doesn't directly relate to any of the measures, but it can cause glycerol and sometimes b_hydroxybutrate to not be quantified. High levels of ethanol might also (metabolically artificially) increase the acetate concentration.

Finally, note that pyruvate, glycerol and glycine measures are unreliable in EDTA-plasma due to interference by EDTA.

Important Note for all data users:

Please be aware that some men may appear in the release file more than once. This is due to the fact that ALSPAC started by enrolling pregnant women and the main study ID is therefore a pregnancy based ID. Therefore if a women enrolled with two different pregnancies (both having an expected delivery date within the recruitment period (April 1991-December 1992)), she will have two separate IDs to uniquely identify these women and their pregnancies. Any man associated with both of these pregnancies will therefore be duplicated.
An indicator variable has been included in the file, called *mult_dad* to identify these men. If you are carrying out father based research that does not require you to consider repeat pregnancies for which we have data then please select mult_dad = 2 to remove the duplicate entries. This will keep one pregnancy and randomly drop the other pregnancy. If you are matching the data included in this file to child based data or have been provided with a dataset that includes the children of the ASLAPC pregnancies, as well as the mother or father-based data, you need not do anything as each pregnancy (and hence each child from a separate pregnancy) has a unique identifier and a fathers' data has been included/repeated here for each of the pregnancies he is associated with where appropriate.

mult_dad Entry is a duplicate - Remove if only looking at fathers: FOF1

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 One father/father figure related to two pregnancies	27	1.5	1.5	1.5
	2 No	1834	98.5	98.5	100.0
	Total	1861	100.0	100.0	

Version History:

1a: Created April 2018

Table 1: Variable names and labels

Variable Name	Variable Label
XXLVLDLP_FOF	Concentration of chylomicrons and extremely large VLDL particles (mol/l): FOF
XXLVLDLL_FOF	Total lipids in chylomicrons and extremely large VLDL (mmol/l): FOF
XXLVLDLPL_FOF	Phospholipids in chylomicrons and extremely large VLDL (mmol/l): FOF
XXLVLDLC_FOF	Total cholesterol in chylomicrons and extremely large VLDL (mmol/l): FOF
XXLVLDLCE_FOF	Cholesterol esters in chylomicrons and extremely large VLDL (mmol/l): FOF
XXLVLDLFC_FOF	Free cholesterol in chylomicrons and extremely large VLDL (mmol/l): FOF
XXLVLDLTG_FOF	Triglycerides in chylomicrons and extremely large VLDL (mmol/l): FOF
XLVLDLP_FOF	Concentration of very large VLDL particles (mol/l): FOF
XLVLDLL_FOF	Total lipids in very large VLDL (mmol/l): FOF
XLVLDLPL_FOF	Phospholipids in very large VLDL (mmol/l): FOF
XLVLDLC_FOF	Total cholesterol in very large VLDL (mmol/l): FOF
XLVLDLCE_FOF	Cholesterol esters in very large VLDL (mmol/l): FOF
XLVLDLFC_FOF	Free cholesterol in very large VLDL (mmol/l): FOF
XLVLDLTG_FOF	Triglycerides in very large VLDL (mmol/l): FOF
LVLDLP_FOF	Concentration of large VLDL particles (mol/l): FOF
LVLDLL_FOF	Total lipids in large VLDL (mmol/l): FOF
LVLDLPL_FOF	Phospholipids in large VLDL (mmol/l): FOF
LVLDLC_FOF	Total cholesterol in large VLDL (mmol/l): FOF
LVLDLCE_FOF	Cholesterol esters in large VLDL (mmol/l): FOF
LVLDLFC_FOF	Free cholesterol in large VLDL (mmol/l): FOF
LVLDLTG_FOF	Triglycerides in large VLDL (mmol/l): FOF
MVLDLP_FOF	Concentration of medium VLDL particles (mol/l): FOF
MVLDLL_FOF	Total lipids in medium VLDL (mmol/l): FOF
MVLDLPL_FOF	Phospholipids in medium VLDL (mmol/l): FOF
MVLDLC_FOF	Total cholesterol in medium VLDL (mmol/l): FOF
MVLDLCE_FOF	Cholesterol esters in medium VLDL (mmol/l): FOF
MVLDLFC_FOF	Free cholesterol in medium VLDL (mmol/l): FOF
MVLDLTG_FOF	Triglycerides in medium VLDL (mmol/l): FOF
SVLDLP_FOF	Concentration of small VLDL particles (mol/l): FOF
SVLDLL_FOF	Total lipids in small VLDL (mmol/l): FOF
SVLDLPL_FOF	Phospholipids in small VLDL (mmol/l): FOF
SVLDLC_FOF	Total cholesterol in small VLDL (mmol/l): FOF
SVLDLCE_FOF	Cholesterol esters in small VLDL (mmol/l): FOF
SVLDLFC_FOF	Free cholesterol in small VLDL (mmol/l): FOF
SVLDLTG_FOF	Triglycerides in small VLDL (mmol/l): FOF
XSVLDLP_FOF	Concentration of very small VLDL particles (mol/l): FOF
XSVLDLL_FOF	Total lipids in very small VLDL (mmol/l): FOF
XSVLDLPL_FOF	Phospholipids in very small VLDL (mmol/l): FOF
XSVLDLC_FOF	Total cholesterol in very small VLDL (mmol/l): FOF
XSVLDLCE_FOF	Cholesterol esters in very small VLDL (mmol/l): FOF
XSVLDLFC_FOF	Free cholesterol in very small VLDL (mmol/l): FOF
XSVLDLTG_FOF	Triglycerides in very small VLDL (mmol/l): FOF

IDLP_FOF	Concentration of IDL particles (mol/l): FOF
IDLL_FOF	Total lipids in IDL (mmol/l): FOF
IDLPL_FOF	Phospholipids in IDL (mmol/l): FOF
IDLC_FOF	Total cholesterol in IDL (mmol/l): FOF
IDLCE_FOF	Cholesterol esters in IDL (mmol/l): FOF
IDLFC_FOF	Free cholesterol in IDL (mmol/l): FOF
IDLTG_FOF	Triglycerides in IDL (mmol/l): FOF
LLDLP_FOF	Concentration of large LDL particles (mol/l): FOF
LLDLL_FOF	Total lipids in large LDL (mmol/l): FOF
LLDLPL_FOF	Phospholipids in large LDL (mmol/l): FOF
LLDLC_FOF	Total cholesterol in large LDL (mmol/l): FOF
LLDLCE_FOF	Cholesterol esters in large LDL (mmol/l): FOF
LLDLFC_FOF	Free cholesterol in large LDL (mmol/l): FOF
LLDLTG_FOF	Triglycerides in large LDL (mmol/l): FOF
MLDLP_FOF	Concentration of medium LDL particles (mol/l): FOF
MLDLL_FOF	Total lipids in medium LDL (mmol/l): FOF
MLDLPL_FOF	Phospholipids in medium LDL (mmol/l): FOF
MLDLC_FOF	Total cholesterol in medium LDL (mmol/l): FOF
MLDLCE_FOF	Cholesterol esters in medium LDL (mmol/l): FOF
MLDLFC_FOF	Free cholesterol in medium LDL (mmol/l): FOF
MLDLTG_FOF	Triglycerides in medium LDL (mmol/l): FOF
SLDLP_FOF	Concentration of small LDL particles (mol/l): FOF
SLDLL_FOF	Total lipids in small LDL (mmol/l): FOF
SLDLPL_FOF	Phospholipids in small LDL (mmol/l): FOF
SLDLC_FOF	Total cholesterol in small LDL (mmol/l): FOF
SLDLCE_FOF	Cholesterol esters in small LDL (mmol/l): FOF
SLDLFC_FOF	Free cholesterol in small LDL (mmol/l): FOF
SLDLTG_FOF	Triglycerides in small LDL (mmol/l): FOF
XLHDLP_FOF	Concentration of very large HDL particles (mol/l): FOF
XLHDLL_FOF	Total lipids in very large HDL (mmol/l): FOF
XLHDLPL_FOF	Phospholipids in very large HDL (mmol/l): FOF
XLHDLC_FOF	Total cholesterol in very large HDL (mmol/l): FOF
XLHDLCE_FOF	Cholesterol esters in very large HDL (mmol/l): FOF
XLHDLFC_FOF	Free cholesterol in very large HDL (mmol/l): FOF
XLHDLTG_FOF	Triglycerides in very large HDL (mmol/l): FOF
LHDLP_FOF	Concentration of large HDL particles (mol/l): FOF
LHDLL_FOF	Total lipids in large HDL (mmol/l): FOF
LHDLPL_FOF	Phospholipids in large HDL (mmol/l): FOF
LHDLC_FOF	Total cholesterol in large HDL (mmol/l): FOF
LHDLCE_FOF	Cholesterol esters in large HDL (mmol/l): FOF
LHDLFC_FOF	Free cholesterol in large HDL (mmol/l): FOF
LHDLTG_FOF	Triglycerides in large HDL (mmol/l): FOF
MHDLP_FOF	Concentration of medium HDL particles (mol/l): FOF
MHDLL_FOF	Total lipids in medium HDL (mmol/l): FOF
MHDLPL_FOF	Phospholipids in medium HDL (mmol/l): FOF

MHDLC_FOF	Total cholesterol in medium HDL (mmol/l): FOF
MHDLCE_FOF	Cholesterol esters in medium HDL (mmol/l): FOF
MHDLFC_FOF	Free cholesterol in medium HDL (mmol/l): FOF
MHDLTG_FOF	Triglycerides in medium HDL (mmol/l): FOF
SHDLP_FOF	Concentration of small HDL particles (mol/l): FOF
SHDLL_FOF	Total lipids in small HDL (mmol/l): FOF
SHDLPL_FOF	Phospholipids in small HDL (mmol/l): FOF
SHDLC_FOF	Total cholesterol in small HDL (mmol/l): FOF
SHDLCE_FOF	Cholesterol esters in small HDL (mmol/l): FOF
SHDLFC_FOF	Free cholesterol in small HDL (mmol/l): FOF
SHDLTG_FOF	Triglycerides in small HDL (mmol/l): FOF
XXLVLDLPL_P_FOF	Phospholipids to total lipids ratio in chylomicrons and XXL VLDL (%): FOF
XXLVLDLC_P_FOF	Total cholesterol to total lipids ratio in chylomicrons and XXL VLDL (%): FOF
XXLVLDLCE_P_FOF	Cholesterol esters to total lipids ratio in chylomicrons and XXL VLDL (%): FOF
XXLVLDLFC_P_FOF	Free cholesterol to total lipids ratio in chylomicrons and XXL VLDL (%): FOF
XXLVLDLTG_P_FOF	Triglycerides to total lipids ratio in chylomicrons and XXL VLDL (%): FOF
XLVLDLPL_P_FOF	Phospholipids to total lipids ratio in very large VLDL (%): FOF
XLVLDLC_P_FOF	Total cholesterol to total lipids ratio in very large VLDL (%): FOF
XLVLDLCE_P_FOF	Cholesterol esters to total lipids ratio in very large VLDL (%): FOF
XLVLDLFC_P_FOF	Free cholesterol to total lipids ratio in very large VLDL (%): FOF
XLVLDLTG_P_FOF	Triglycerides to total lipids ratio in very large VLDL (%): FOF
LVLDLPL_P_FOF	Phospholipids to total lipids ratio in large VLDL (%): FOF
LVLDLC_P_FOF	Total cholesterol to total lipids ratio in large VLDL (%): FOF
LVLDLCE_P_FOF	Cholesterol esters to total lipids ratio in large VLDL (%): FOF
LVLDLFC_P_FOF	Free cholesterol to total lipids ratio in large VLDL (%): FOF
LVLDLTG_P_FOF	Triglycerides to total lipids ratio in large VLDL (%): FOF
MVLDLPL_P_FOF	Phospholipids to total lipids ratio in medium VLDL (%): FOF
MVLDLC_P_FOF	Total cholesterol to total lipids ratio in medium VLDL (%): FOF
MVLDLCE_P_FOF	Cholesterol esters to total lipids ratio in medium VLDL (%): FOF
MVLDLFC_P_FOF	Free cholesterol to total lipids ratio in medium VLDL (%): FOF
MVLDLTG_P_FOF	Triglycerides to total lipids ratio in medium VLDL (%): FOF
SVLDLPL_P_FOF	Phospholipids to total lipids ratio in small VLDL (%): FOF
SVLDLC_P_FOF	Total cholesterol to total lipids ratio in small VLDL (%): FOF
SVLDLCE_P_FOF	Cholesterol esters to total lipids ratio in small VLDL (%): FOF
SVLDLFC_P_FOF	Free cholesterol to total lipids ratio in small VLDL (%): FOF
SVLDLTG_P_FOF	Triglycerides to total lipids ratio in small VLDL (%): FOF
XSVLDLPL_P_FOF	Phospholipids to total lipids ratio in very small VLDL (%): FOF
XSVLDLC_P_FOF	Total cholesterol to total lipids ratio in very small VLDL (%): FOF
XSVLDLCE_P_FOF	Cholesterol esters to total lipids ratio in very small VLDL (%): FOF
XSVLDLFC_P_FOF	Free cholesterol to total lipids ratio in very small VLDL (%): FOF
XSVLDLTG_P_FOF	Triglycerides to total lipids ratio in very small VLDL (%): FOF
IDLPL_P_FOF	Phospholipids to total lipids ratio in IDL (%): FOF
IDLC_P_FOF	Total cholesterol to total lipids ratio in IDL (%): FOF
IDLCE_P_FOF	Cholesterol esters to total lipids ratio in IDL (%): FOF
IDLFC_P_FOF	Free cholesterol to total lipids ratio in IDL (%): FOF

IDLTG_P_FOF	Triglycerides to total lipids ratio in IDL (%): FOF
LLDLPL_P_FOF	Phospholipids to total lipids ratio in large LDL (%): FOF
LLDLC_P_FOF	Total cholesterol to total lipids ratio in large LDL (%): FOF
LLDLCE_P_FOF	Cholesterol esters to total lipids ratio in large LDL (%): FOF
LLDLFC_P_FOF	Free cholesterol to total lipids ratio in large LDL (%): FOF
LLDLTG_P_FOF	Triglycerides to total lipids ratio in large LDL (%): FOF
MLDLPL_P_FOF	Phospholipids to total lipids ratio in medium LDL (%): FOF
MLDLC_P_FOF	Total cholesterol to total lipids ratio in medium LDL (%): FOF
MLDLCE_P_FOF	Cholesterol esters to total lipids ratio in medium LDL (%): FOF
MLDLFC_P_FOF	Free cholesterol to total lipids ratio in medium LDL (%): FOF
MLDLTG_P_FOF	Triglycerides to total lipids ratio in medium LDL (%): FOF
SLDLPL_P_FOF	Phospholipids to total lipids ratio in small LDL (%): FOF
SLDLC_P_FOF	Total cholesterol to total lipids ratio in small LDL (%): FOF
SLDLCE_P_FOF	Cholesterol esters to total lipids ratio in small LDL (%): FOF
SLDLFC_P_FOF	Free cholesterol to total lipids ratio in small LDL (%): FOF
SLDLTG_P_FOF	Triglycerides to total lipids ratio in small LDL (%): FOF
XLHDLPL_P_FOF	Phospholipids to total lipids ratio in very large HDL (%): FOF
XLHDLC_P_FOF	Total cholesterol to total lipids ratio in very large HDL (%): FOF
XLHDLCE_P_FOF	Cholesterol esters to total lipids ratio in very large HDL (%): FOF
XLHDLFC_P_FOF	Free cholesterol to total lipids ratio in very large HDL (%): FOF
XLHDLTG_P_FOF	Triglycerides to total lipids ratio in very large HDL (%): FOF
LHDLPL_P_FOF	Phospholipids to total lipids ratio in large HDL (%): FOF
LHDLC_P_FOF	Total cholesterol to total lipids ratio in large HDL (%): FOF
LHDLCE_P_FOF	Cholesterol esters to total lipids ratio in large HDL (%): FOF
LHDLFC_P_FOF	Free cholesterol to total lipids ratio in large HDL (%): FOF
LHDLTG_P_FOF	Triglycerides to total lipids ratio in large HDL (%): FOF
MHDLPL_P_FOF	Phospholipids to total lipids ratio in medium HDL (%): FOF
MHDLC_P_FOF	Total cholesterol to total lipids ratio in medium HDL (%): FOF
MHDLCE_P_FOF	Cholesterol esters to total lipids ratio in medium HDL (%): FOF
MHDLFC_P_FOF	Free cholesterol to total lipids ratio in medium HDL (%): FOF
MHDLTG_P_FOF	Triglycerides to total lipids ratio in medium HDL (%): FOF
SHDLPL_P_FOF	Phospholipids to total lipids ratio in small HDL (%): FOF
SHDLC_P_FOF	Total cholesterol to total lipids ratio in small HDL (%): FOF
SHDLCE_P_FOF	Cholesterol esters to total lipids ratio in small HDL (%): FOF
SHDLFC_P_FOF	Free cholesterol to total lipids ratio in small HDL (%): FOF
SHDLTG_P_FOF	Triglycerides to total lipids ratio in small HDL (%): FOF
VLDLD_FOF	Mean diameter for VLDL particles (nm): FOF
LDLD_FOF	Mean diameter for LDL particles (nm): FOF
HDLD_FOF	Mean diameter for HDL particles (nm): FOF
SerumC_FOF	Serum total cholesterol (mmol/l): FOF
VLDLC_FOF	Total cholesterol in VLDL (mmol/l): FOF
RemnantC_FOF	Remnant cholesterol (non-HDL & non-LDL-cholesterol) (mmol/l): FOF
LDLC_FOF	Total cholesterol in LDL (mmol/l): FOF
HDLC_FOF	Total cholesterol in HDL (mmol/l): FOF
HDL2C_FOF	Total cholesterol in HDL2 (mmol/l): FOF

HDL3C_FOF	Total cholesterol in HDL3 (mmol/l): FOF
EstC_FOF	Esterified cholesterol (mmol/l): FOF
FreeC_FOF	Free cholesterol (mmol/l): FOF
SerumTG_FOF	Serum total triglycerides (mmol/l): FOF
VLDLTG_FOF	Triglycerides in VLDL (mmol/l): FOF
LDLTG_FOF	Triglycerides in LDL (mmol/l): FOF
HDLTG_FOF	Triglycerides in HDL (mmol/l): FOF
DAG_FOF	Diacylglycerol (mmol/l): FOF
DAGTG_FOF	Ratio of diacylglycerol to triglycerides: FOF
TotPG_FOF	Total phosphoglycerides (mmol/l): FOF
TGPG_FOF	Ratio of triglycerides to phosphoglycerides: FOF
PC_FOF	Phosphatidylcholine and other cholines (mmol/l): FOF
SM_FOF	Sphingomyelins (mmol/l): FOF
TotCho_FOF	Total cholines (mmol/l): FOF
ApoA1_FOF	Apolipoprotein A-I (g/l): FOF
ApoB_FOF	Apolipoprotein B (g/l): FOF
ApoBApoA1_FOF	Ratio of apolipoprotein B to apolipoprotein A-I: FOF
TotFA_FOF	Total fatty acids (mmol/l): FOF
FALen_FOF	Estimated description of fatty acid chain length (not actual carbon number): FOF
UnSat_FOF	Estimated degree of unsaturation: FOF
DHA_FOF	22:6, docosahexaenoic acid (mmol/l): FOF
LA_FOF	18:2, linoleic acid (mmol/l): FOF
CLA_FOF	Conjugated linoleic acid (mmol/l): FOF
FAw3_FOF	Omega-3 fatty acids (mmol/l): FOF
FAw6_FOF	Omega-6 fatty acids (mmol/l): FOF
PUFA_FOF	Polyunsaturated fatty acids (mmol/l): FOF
MUFA_FOF	Monounsaturated fatty acids; 16:1, 18:1 (mmol/l): FOF
SFA_FOF	Saturated fatty acids (mmol/l): FOF
DHAFA_FOF	Ratio of 22:6 docosahexaenoic acid to total fatty acids (%): FOF
LAFA_FOF	Ratio of 18:2 linoleic acid to total fatty acids (%): FOF
CLAFA_FOF	Ratio of conjugated linoleic acid to total fatty acids (%): FOF
FAw3FA_FOF	Ratio of omega-3 fatty acids to total fatty acids (%): FOF
FAw6FA_FOF	Ratio of omega-6 fatty acids to total fatty acids (%): FOF
PUFAFA_FOF	Ratio of polyunsaturated fatty acids to total fatty acids (%): FOF
MUFAFA_FOF	Ratio of monounsaturated fatty acids to total fatty acids (%): FOF
SFAFA_FOF	Ratio of saturated fatty acids to total fatty acids (%): FOF
Glc_FOF	Glucose (mmol/l): FOF
Lac_FOF	Lactate (mmol/l): FOF
Pyr_FOF	Pyruvate (mmol/l): FOF
High_Pyr_FOF	High levels of pyruvate noted in sample: FOF
Cit_FOF	Citrate (mmol/l): FOF
Ala_FOF	Alanine (mmol/l): FOF
Gln_FOF	Glutamine (mmol/l): FOF
His_FOF	Histidine (mmol/l): FOF
Ile_FOF	Isoleucine (mmol/l): FOF

Leu_FOF	Leucine (mmol/l): FOF
Val_FOF	Valine (mmol/l): FOF
Phe_FOF	Phenylalanine (mmol/l): FOF
Tyr_FOF	Tyrosine (mmol/l): FOF
Ace_FOF	Acetate (mmol/l): FOF
bOHBut_FOF	3-hydroxybutyrate (mmol/l): FOF
Crea_FOF	Creatinine (mmol/l): FOF
Alb_FOF	Albumin (signal area): FOF
Gp_FOF	Glycoprotein acetyls, mainly a1-acid glycoprotein (mmol/l): FOF
High_Eth_FOF	High levels of ethanol noted in sample: FOF