

For LabSolutions™ LCMS

LC/MS/MS Method Package for Lipid Mediators Ver. 3



LCMS-8060NX

Ready-to-Use Analytical Conditions

Lipid mediators (bioactive lipids) have important physiological functions and have been associated with allergies, thrombosis and lifestyle-related diseases. This method package provides a simultaneous analysis method that encompasses totally 214 compounds, which include 196 compounds of lipid mediators derived from arachidonic acid cascade and 18 internal standard compounds.

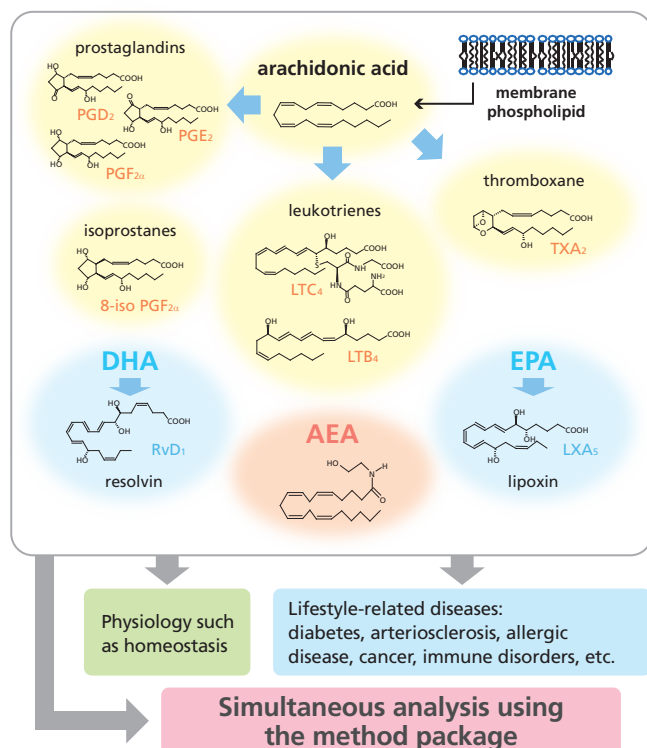


Figure: Lipid mediator and physiology

Retention Time Correcting Tool Supports Identification of Isomers

The Retention Time Correcting Tool available in this version simplifies retention time correction, enabling precise identification of isomers that cannot be distinguished by MRM. The 196 compounds are divided into 18 groups based on their properties, and internal standard samples have been chosen for each group, making it possible to correct for quantitation errors that may arise, such as during solid phase extraction.

Select ISTD	Input All Measurement Retention Time	Output Corrected Retention Time
<input type="checkbox"/> tetrao-PGEM-d8	2.769	2.769
<input checked="" type="checkbox"/> 6-keto-PGF1α-d4	2.927	2.927
	2.726	No peak is detected
	3.180	No peak is detected
<input type="checkbox"/> TXB2-d4	4.380	4.380
	4.594	No peak is detected
<input type="checkbox"/> PGF2α-d4	5.260	5.260
	5.503	No peak is detected
<input checked="" type="checkbox"/> PGE2-d4	6.010	6.010
	6.480	No peak is detected
<input type="checkbox"/> PGE2-d4	6.540	6.540
	6.969	No peak is detected
<input type="checkbox"/> LTB4-d4	7.140	7.140
	7.280	No peak is detected
<input type="checkbox"/> 14:15dHETE-d11	7.440	7.440
<input type="checkbox"/> 15HETE-d8	7.520	7.520
	7.560	No peak is detected
<input checked="" type="checkbox"/> 12HETE-d8	7.600	7.600
	7.620	No peak is detected
<input type="checkbox"/> 5HETE-d8	7.880	7.880
	7.970	No peak is detected
<input type="checkbox"/> 11:12EET-d11	7.965	7.965
	8.030	No peak is detected
<input type="checkbox"/> LTC4-d5	8.120	8.120
	8.276	No peak is detected
<input type="checkbox"/> LTD4-d5	8.195	8.195
	8.263	No peak is detected
<input type="checkbox"/> PAF-d4	8.330	8.330
	8.360	No peak is detected
<input type="checkbox"/> DEA-d4	8.910	8.910
	8.545	No peak is detected

UFMS Technology Covers a Wide Range of Compound Groups

Fatty acids are usually detected with ESI-, but for a few important lipid mediators such as anandamide (AEA), ESI+ is preferred. Conventional joint analysis methods use only unipolar analysis. But the LCMS-8060 (NX) is capable of high-speed polarity reversal in just 5 ms, allowing many more types of compounds to be analyzed simultaneously. Compounds listed for joint analysis include 99 arachidonic acid derivatives, 26 EPA derivatives, 23 DHA derivatives, 11 ethanolamides, and 37 others, including other fatty acid metabolites and platelet-activating factor (PAF).

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Index of compounds

No.	CAT	Compound	No.	CAT	Compound	No.	CAT	Compound	No.	CAT	Compound
1	LA	(±)12,13-DIHOME	55	AA	11β-13,14-dihydro-15-keto Prostaglandin F _{2a}	109	AA	(±)14(15)-EET	163	DHA	10(S),17(S)-DiHDHA
2	LA	(±)9,10-DIHOME	56	AA	15-keto Prostaglandin E ₂	110	AA	5-OxoETE	164	DHA	Resolvin D ₃
3	LA	13(S)-HODE	57	AA	14,15-LTC ₄	111	AA	(±)11(12)-EET	165	DHA	7(S),17(S)-hydroxy-docosapentaenoic acid
4	LA	9(S)-HODE	58	AA	13,14-dihydro-15-keto Prostaglandin F _{2a}	112	AA	(±)8(9)-EET	166	DHA	(±)19(20)-DiHDPA
5	LA	(±)9-HpODE	59	AA	5(S),6(R)-Lipoxin A ₄	113	AA	(±)5(6)-EET	167	DHA	(±)20-HDHA
6	LA	13-OxoODE	60	AA	13,14-dihydro-15-keto Prostaglandin E ₂	114	AA	Arachidonic Acid (AA)	168	DHA	(±)16-HDHA
7	LA	13(S)-HpODE	61	AA	5(S),6(S)-Lipoxin A ₄	115	ADA	1a,1b-dihomo-Prostaglandin F _{2a}	169	DHA	(±)17-HDHA
8	LA	9-OxoODE	62	AA	14,15-LTE ₄ , Eoxin E ₄	116	DGLA	2,3-dinor Thromboxane B ₁	170	DHA	(±)13-HDHA
9	LA	(±)12(13)-EpOME	63	AA	13,14-dihydro-15-keto Prostaglandin D ₂	117	DGLA	2,3-dinor Prostaglandin E ₁	171	DHA	(±)10-HDHA
10	LA	(±)9(10)-EpOME	64	AA	Leukotriene C ₄	118	DGLA	Thromboxane B ₁	172	DHA	(±)14-HDHA
11	ALA	9(S)-HOTfE	65	AA	11-trans LTC ₄	119	DGLA	8-iso Prostaglandin F _{1a}	173	DHA	(±)11-HDHA
12	ALA	13(S)-HOTfE	66	AA	Leukotriene D ₄	120	DGLA	Prostaglandin F _{1a}	174	DHA	(±)7-HDHA
13	ALA	13(S)-HpOTfE	67	AA	Leukotriene E ₄	121	DGLA	8-iso Prostaglandin E ₁	175	DHA	(±)8-HDHA
14	EDA	11(S)-HEDE	68	AA	Leukotriene F ₄	122	DGLA	Prostaglandin E ₁	176	DHA	17(S)-HpDHA
15	EDA	(±)15-HEDE	69	AA	8-iso Prostaglandin A ₂	123	DGLA	15-keto Prostaglandin F _{1a}	177	DHA	(±)4-HDHA
16	EDA	15-OxoEDE	70	AA	11-trans LTD ₄	124	DGLA	Prostaglandin D ₁	178	DHA	(±)19(20)-EpDPA
17	AA	tetranor-PGFM	71	AA	Prostaglandin A ₂	125	DGLA	13,14-dihydro Prostaglandin F _{1a}	179	DHA	(±)16(17)-EpDPA
18	AA	tetranor-PGEM	72	AA	11-trans LTE ₄	126	DGLA	13,14-dihydro Prostaglandin E ₁	180	DHA	Docosahexaenoic Acid (DHA)
19	AA	tetranor-PGDM	73	AA	Prostaglandin J ₂	127	DGLA	13,14-dihydro-15-keto Prostaglandin D ₁	181	EA	Prostaglandin F _{2a} Ethanolamide
20	AA	tetranor-PGJM	74	AA	Prostaglandin B ₂	128	DGLA	8-iso Prostaglandin A ₁	182	EA	Prostaglandin E ₂ Ethanolamide
21	AA	tetranor-PGAM	75	AA	8,12-iso-iPF _{2a} -VI 1,5- lactone	129	DGLA	Prostaglandin A ₁	183	EA	Prostaglandin E ₁ ethanolamide
22	AA	20-hydroxy Prostaglandin F _{2a}	76	AA	8(S),15(S)-DIHETE	130	DGLA	8(S)-HETE	184	EA	Prostaglandin D ₂ Ethanolamide
23	AA	20-hydroxy Prostaglandin E ₂	77	AA	6-trans LTB ₄	131	DGLA	5(S)-HETE	185	EA	LTB ₄ ethanolamide
24	AA	18-carboxy dinor LTB ₄	78	AA	5(S),15(S)-DIHETE	132	EPA	Δ17-6-keto Prostaglandin F _{1a}	186	EA	(±)14(15)-EET ethanolamide
25	AA	13,14-dihydro-15-keto-tetranor Prostaglandin F _{1a}	79	AA	13,14-dihydro-15-keto Prostaglandin A ₂	133	EPA	Resolvin E ₁	187	EA	(±)11(12)-EET ethanolamide
26	AA	2,3-dinor-8-iso Prostaglandin F _{2a}	80	AA	Leukotriene B ₄	134	EPA	8-iso Prostaglandin F _{3a}	188	EA	(±)8(9)-EET ethanolamide
27	AA	2,3-dinor Thromboxane B ₂	81	AA	13,14-dihydro-15-keto Prostaglandin J ₂	135	EPA	Thromboxane B ₃	189	EA	(±)5(6)-EET ethanolamide
28	AA	13,14-dihydro-15-keto-tetranor Prostaglandin F _{1a}	82	AA	12-oxo LTB ₄	136	EPA	Prostaglandin F _{3a}	190	EA	Arachidonoyl ethanolamide
29	AA	2,3-dinor-11β-Prostaglandin F _{2a}	83	AA	tetranor-12(S)-HETE	137	EPA	11-dehydro Thromboxane B ₃	191	EA	OEA (oleoyl ethanolamide)
30	AA	6-keto-Prostaglandin F _{1a}	84	AA	N-acetyl LTE ₄	138	EPA	Prostaglandin E ₃	192		LysO-PAF C-16
31	AA	13,14-dihydro-15-keto-tetranor Prostaglandin D ₂	85	AA	(±)14(15)-DIHET	139	EPA	Prostaglandin D ₃	193		PAF C-16
32	AA	20-carboxy leukotriene B ₄	86	AA	12(S)-HHfE	140	EPA	Lipoxin A ₅	194		Azelaloyl PAF
33	AA	6-keto Prostaglandin E ₁	87	AA	(±)11(12)-DIHET	141	EPA	Leukotriene B ₅	195	MA	Leukotriene B ₃
34	AA	20-hydroxy leukotriene B ₄	88	AA	(±)8(9)-DIHET	142	EPA	(±)17,18-DIHETE	196	MA	15(S)-HETE
35	AA	11-dehydro-2,3-dinor Thromboxane B ₂	89	AA	20-carboxy arachidonic acid	143	EPA	(±)14(15)-DIHETE	197	ISTD	tetranor-PGEM-d ₈
36	AA	13,14-dihydro-15-keto-tetranor Prostaglandin E ₂	90	AA	(±)5(6)-DIHET	144	EPA	(±)5(6)-DIHETE	198	ISTD	6-keto-Prostaglandin F _{1a} -d ₈
37	AA	6,15-diketo-13,14-dihydro Prostaglandin F _{1a}	91	AA	19(S)-HETE	145	EPA	(±)18-HEPE	199	ISTD	Thromboxane B ₃ -d ₈
38	AA	iPF _{2a} -IV	92	AA	15-deoxy-delta12,14-PGJ ₂	146	EPA	15(S)-HEPE	200	ISTD	Prostaglandin F _{2a} -d ₈
39	AA	8-iso-15(R)-Prostaglandin F _{2a}	93	AA	20-HETE	147	EPA	11(S)-HEPE	201	ISTD	Prostaglandin E ₂ -d ₈
40	AA	8-iso Prostaglandin F _{2a}	94	AA	(±)18-HETE	148	EPA	8(S)-HEPE	202	ISTD	Prostaglandin D ₂ -d ₈
41	AA	Thromboxane B ₂	95	AA	(±)17-HETE	149	EPA	9(S)-HEPE	203	ISTD	Leukotriene C ₄ -d ₈
42	AA	11β-Prostaglandin F _{2a}	96	AA	(±)16-HETE	150	EPA	12(S)-HEPE	204	ISTD	Leukotriene D ₄ -d ₈
43	AA	(±)5-iPF _{2a} -VI	97	AA	15(S)-HETE	151	EPA	5(S)-HEPE	205	ISTD	Prostaglandin A ₂ -d ₈
44	AA	8-iso-15-keto Prostaglandin F _{2a}	98	AA	11(S)-HETE	152	EPA	15(S)-HpEPE	206	ISTD	Leukotriene B ₄ -d ₈
45	AA	Prostaglandin F _{2a}	99	AA	8(S)-HETE	153	EPA	12(S)-HpEPE	207	ISTD	(±)14(15)-DIHET-d ₁₁
46	AA	8-iso-13,14-dihydro-15-keto Prostaglandin F _{2a}	100	AA	12(S)-HETE	154	EPA	5(S)-HpEPE	208	ISTD	5(S) HETE-d ₈
47	AA	8-iso Prostaglandin E ₂	101	AA	15-OxoETE	155	EPA	(±)17(18)-EpETE	209	ISTD	12(S)-HETE-d ₈
48	AA	Prostaglandin E ₂	102	AA	15(S)-HpETE	156	EPA	(±)14(15)-EpETE	210	ISTD	5(S)-HETE-d ₈
49	AA	11-dehydro Thromboxane B ₂	103	AA	(±)9-HETE	157	EPA	Eicosapentaenoic Acid(EPA)	211	ISTD	PAF C-16-d ₈
50	AA	15-keto Prostaglandin F _{2a}	104	AA	5(S)-HETE	158	DHA	Resolvin D ₃	212	ISTD	(±)11(12)-EET-d ₁₁
51	AA	11β-Prostaglandin E ₂	105	AA	12(S)-HpETE	159	DHA	Resolvin D ₂	213	ISTD	Oleoyl ethanolamide-d ₈
52	AA	5(S),14(R)-LXB ₄	106	AA	12-OxoETE	160	DHA	Resolvin D ₁	214	ISTD	AA-d ₈
53	AA	Prostaglandin K ₂	107	AA	(±)5,6-DHET-lactone	161	DHA	Resolvin D ₄			
54	AA	Prostaglandin D ₂	108	AA	5(S)-HpETE	162	DHA	7(R)-Maresin 1			

Category codes

LA : linoleic acid

ALA : α-linolenic acid

EDA : eicosadienoic acid

AA : arachidonic acid

ADA : adrenic acid

DGLA : dihomo-γ-linolenic acid

EPA : eicosapentaenoic acid

DHA : docosahexaenoic acid

EA : ethanolamide

MA : mead acid

ISTD : internal standard

Remarks and Precautions

LabSolutions LCMS Ver. 5.99SP2 or later and LabSolutions Insight Ver. 3.7SP3 or later are required.

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