

## **Supporting information**

### **Metabolic Fingerprinting of Feces from Calves, Subjected to Gram Negative Bacterial Endotoxin**

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**Table S1. Top-ranked chemical structures and their classification, as proposed by SIRIUS software for gram-negative bacterial endotoxin candidate markers.**

ID	Rank	Name	PubChem CID	Superclass	Class	Subclass	Parent Level 1	Parent Level 2
1	1	Amylamine	8060	Organic nitrogen compounds	Organonitrogen compounds	Amines	Primary amines	Monoalkylamines
	2	2-Aminopentane	12246	Organic nitrogen compounds	Organonitrogen compounds	Amines	Primary amines	Monoalkylamines
	3	Isoamylamine	7894	Organic nitrogen compounds	Organonitrogen compounds	Amines	Primary amines	Monoalkylamines
2	1	N-Cyclobutylacetamide	23087721	Organic acids and derivatives	Carboxylic acids and derivatives	Carboxylic acid derivatives	Carboxylic acid amides	Acetamides
	2	N-(3-Butenyl)acetamide	13600051	Organic acids and derivatives	Carboxylic acids and derivatives	Carboxylic acid derivatives	Carboxylic acid amides	Acetamides
	3	N-Ethyloxolan-2-imine	21720742	Organoheterocyclic compounds	Oxolanes	-	Oxolanes	-
3	No candidate structures could be retrieved for the assigned chemical formula		-	-	-	-	-	-
4	1	Non-live	57449799	Organic nitrogen compounds	Organonitrogen compounds	Amines	Aralkylamines	-
	2	Non-live	57424791	Organoheterocyclic compounds	Diazines	Pyrazines	Methoxypyrazines	-

5	3	Non-live	57424804	Organoheterocyclic compounds	Diazines	Pyrazines	Methoxypyrazines	-
	1	4-Acetamido-1-pentanol	541465	Organic acids and derivatives	Carboxylic acids and derivatives	Carboxylic acid derivatives	Carboxylic acid amides	Acetamides
	2	N-[(S)-1-(Hydroxymethyl)butyl]acetamide	10464451	Organic acids and derivatives	Carboxylic acids and derivatives	Carboxylic acid derivatives	Carboxylic acid amides	Acetamides
	3	N-[(2R,4R)-4-Hydroxypentan-2-yl]acetamide	55299592	Organic acids and derivatives	Carboxylic acids and derivatives	Carboxylic acid derivatives	Carboxylic acid amides	Acetamides
6	No candidate structures could be retrieved for the assigned chemical formula		-	-	-	-	-	-
	1	2-Carbamoyl-2-cyanocyclopropane-1-carboxylic acid	66771129	Organic acids and derivatives	Carboxylic acids and derivatives	Cyclopropanecarboxylic acids and derivatives	Cyclopropanecarboxylic acids	-
	2	4-Nitrophenylhydroxylamine	5486551	Benzenoids	Benzene and substituted derivatives	Nitrobenzenes	Nitrobenzenes	-
	3	4-Amino-2-nitrophenol	3417419	Benzenoids	Phenols	Nitrophenols	Nitrophenols	-
8	No candidate structures could be retrieved for the assigned chemical formula		-	-	-	-	-	-
	1	N-(Prop-2-enoylamino)oxyprop-2-enamide	21319806	Organic acids and derivatives	Carboxylic acids and derivatives	Acrylic acids and derivatives	Acrylic acids and derivatives	-
	2	4(3H)-Pyrimidinone, 6-hydroxy-2-methoxy-5-methyl-	58035213	Organoheterocyclic compounds	Diazines	Pyrimidines and pyrimidine derivatives	Hydroxypyrimidines	-

10	3	[(Z)-C-Ethenyl-N-hydroxycarbonimidoyl] (1E)-N-hydroxyprop-2-enimide	88660874	Organic oxygen compounds	Organooxygen compounds	-	Organooxygen compounds	-
	1	Oxoverdazyl	102285420	Organoheterocyclic compounds	Imidolactams	-	Imidolactams	-
	2	-	-	-	-	-	-	-
	3	-	-	-	-	-	-	-
11	1	N-(1-Hydroxybutan-2-yl)-2-methylpropanamide	43417884	Organic acids and derivatives	Carboxylic acids and derivatives	Carboxylic acid derivatives	Carboxylic acid amides	Secondary carboxylic acid amides
	2	Ethyl [isopropyl(methyl)amino]acetat	23465149	Organic acids and derivatives	Carboxylic acids and derivatives	Amino acids, peptides, and analogues	Amino acids and derivatives	Alpha amino acids and derivatives
	3	2-(Hydroxymethyl)-N-propan-2-ylbutanamide	117565592	Not found	Not found	Not found	Not found	Not found
12	1	1-(3-Hydroxyphenyl)propane-1,2-dione	17986404	Benzenoids	Benzene and substituted derivatives	Phenylpropanes	Phenylpropanes	-
	2	3-(3,5-Dihydroxyphenyl)prop-2-enal	54245519	Phenylpropanoids and polyketides	Cinnamaldehydes	-	Cinnamaldehydes	-
	3	(E)-3-(2,5-Dihydroxyphenyl)prop-2-enal	12023877	Phenylpropanoids and polyketides	Cinnamaldehydes	-	Cinnamaldehydes	-
13		No candidate structures could be retrieved for the assigned chemical formula	-	-	-	-	-	-
14	1	N,N-Dimethylimidazo[1,2-b]pyrazole-5-carboxamide	67821321	Not found	Not found	Not found	Not found	Not found

15	2	N,N-Dimethylimidazo[1,2-b]pyrazole-1-carboxamide	19089098	Organoheterocyclic compounds	Azoles	Imidazoles	Substituted imidazoles	Carbonylimidazoles
	3	N-[(Dimethylamino)methylene]pyrazine-2-carboxamide	16727655	Organoheterocyclic compounds	Diazines	Pyrazines	Pyrazine carboxylic acids and derivatives	Pyrazinecarboxamides
	No candidate structures could be retrieved for the assigned chemical formula		-	-	-	-	-	-
16	No candidate structures could be retrieved for the assigned chemical formula		-	-	-	-	-	-
17	1	N-[2-(1H-Imidazol-5-yl)ethyl]-2,2-dimethylpropanamide	21360995	Organoheterocyclic compounds	Azoles	Imidazoles	Imidazoles	-
	2	N-[2-(1H-Imidazol-5-yl)ethyl]pentanamide	24284602	Lipids and lipid-like molecules	Fatty Acyls	Fatty amides	N-acyl amines	-
	3	Dolichotheline	168082	Lipids and lipid-like molecules	Fatty Acyls	Fatty amides	N-acyl amines	-
18	1	(2S)-2-Amino-N-butan-2-yl-4-methylsulfanylbutanamide	61148528	Not found	Not found	Not found	Not found	Not found
	2	(2S)-2-Amino-N-(4-methylsulfanylbutan-2-yl)butanamide	103797251	Organic acids and derivatives	Carboxylic acids and derivatives	Amino acids, peptides, and analogues	Amino acids and derivatives	Alpha amino acids and derivatives
	3	(2S)-2-Amino-N-(2-methylpropyl)-4-methylsulfanylbutanamide	22691833	Organic acids and derivatives	Carboxylic acids and derivatives	Amino acids, peptides, and analogues	Amino acids and derivatives	Alpha amino acids and derivatives
19	1	N-(6-Acetamidohexyl)propanamide	58534772	Organic acids and derivatives	Carboxylic acids and derivatives	Carboxylic acid derivatives	Carboxylic acid amides	Acetamides
	2	N-(7-Acetamidoheptyl)acetamide	340007	Organic acids and derivatives	Carboxylic acids and derivatives	Carboxylic acid derivatives	Carboxylic acid amides	Acetamides

20	3	N-(4-Acetamidobutyl)pentanamide	110602639	Lipids and lipid-like molecules	Fatty Acyls	Fatty amides	N-acyl amines	-
	1	2-Amino-N-(1-phenylpropan-2-yl)butanamide	63011958	Carboxylic acids and derivatives	Amino acids, peptides, and analogues	Amino acids and derivatives	Alpha amino acids and derivatives	Organic acids and derivatives
	2	N-Sec-Butyl-L-phenylalaninamide	12968595	Carboxylic acids and derivatives	Amino acids, peptides, and analogues	Amino acids and derivatives	Alpha amino acids and derivatives	Organic acids and derivatives
	3	(2S)-2-Amino-N-(1-phenylbutan-2-yl)propanamide	119313535	Benzene and substituted derivatives	Phenethylamines	Amphetamines and derivatives	Benzenoids	-
21	No relevant fragmentation data could be acquired, for which structural elucidation was not possible		-	-	-	-	-	-
22	No relevant fragmentation data could be acquired, for which structural elucidation was not possible		-	-	-	-	-	-
23	1	N-[(1R,4R)-4-(Propionylamino)-1-methylpentyl]propionamide	12102040	Organic acids and derivatives	Carboxylic acids and derivatives	Carboxylic acid derivatives	Carboxylic acid amides	Secondary carboxylic acid amides
	2	N-[5-(Propanoylamino)hexyl]propanamide	58779522	Organic acids and derivatives	Carboxylic acids and derivatives	Carboxylic acid derivatives	Carboxylic acid amides	Secondary carboxylic acid amides
	3	Leucyl-l-leucinal	484685	Organic acids and derivatives	Carboxylic acids and derivatives	Amino acids, peptides, and analogues	Amino acids and derivatives	Alpha amino acids and derivatives
24	1	6-Acetamido-N-(2-methylpropyl)hexanamide	60653476	Lipids and lipid-like molecules	Fatty Acyls	Fatty amides	N-acyl amines	-

	2	6-Acetamido-N-butan-2-ylhexanamide	60652726	Lipids and lipid-like molecules	Fatty Acyls	Fatty amides	N-acyl amines	-
	3	N-(5-Acetamidooctyl)acetamide	57543871	Organic acids and derivatives	Carboxylic acids and derivatives	Carboxylic acid derivatives	Carboxylic acid amides	Acetamides
25	1	Non-live	83431936	Organoheterocyclic compounds	Imidazopyridines	-	Imidazopyridines	-
	2	Non-live	83421718	Organoheterocyclic compounds	Imidazopyridines	-	Imidazopyridines	-
	3	N-(2-Acetamidoethyl)-2-(methylamino)pyridine-3-carboxamide	55139084	Organoheterocyclic compounds	Pyridines and derivatives	Pyridinecarboxylic acids and derivatives	Pyridinecarboxamides	Nicotinamides
26	1	5-Butyl-1,5-diisocyanatononane	87324424	Organic nitrogen compounds	Organonitrogen compounds	Isocyanates	Isocyanates	-
	2	1,9-Diisocyanato-5-methyl-5-propylnonane	54160877	Not found	Not found	Not found	Not found	Not found
	3	2-[2-[Di(propan-2-yl)amino]ethoxy]-6-methoxyaniline	104260349	Benzenoids	Phenol ethers	Aminophenyl ethers	Aminophenyl ethers	-
27		No relevant fragmentation data could be acquired, for which structural elucidation was not possible	-	-	-	-	-	-
28	1	N-[(5R,6R,7S,8R)-6,7,8,9-Tetrahydroxy-2-methyl-3,4-dioxonon-1-en-5-yl]acetamide	23588580	Organic oxygen compounds	Organooxygen compounds	Carbohydrates and carbohydrate conjugates	Aminosaccharides	-
	2	[(2R,3S,4R,5R)-5-Acetamido-4-acetyloxy-2-hydroxy-6-oxohexan-3-yl]acetate	18610468	No data available	No data available	No data available	No data available	No data available
	3	Triacetylmycosamine	90479594	Not found	Not found	Not found	Not found	Not found

29		No relevant fragmentation data could be acquired, for which structural elucidation was not possible	-	-	-	-	-	-
30	1	7-[(1R,2S,5R)-2-Hydroxy-5-[(3S)-3-hydroxy-4-methyloct-1-en-6-ynyl]cyclopentyl]hept-5-enoic acid	57090564	No data available	No data available	No data available	No data available	No data available
	2	(Z)-7-[(1R,2S,5R)-2-Hydroxy-5-[(E)-3-hydroxy-3-methyloct-1-en-6-ynyl]cyclopentyl]hept-5-enoic acid	70588329	No data available	No data available	No data available	No data available	No data available
	3	6a-Carbaprostaglandin I3	6438653	No data available	No data available	No data available	No data available	No data available
31		No relevant fragmentation data could be acquired, for which structural elucidation was not possible	-	-	-	-	-	-
32		No relevant fragmentation data could be acquired, for which structural elucidation was not possible	-	-	-	-	-	-
33	1	6-[Bis[2-(2-methylpropylamino)-2-oxoethyl]amino]-N-hydroxyhexanamide	11222529	Organic acids and derivatives	Carboxylic acids and derivatives	Amino acids, peptides, and analogues	Amino acids and derivatives	Alpha amino acids and derivatives
	2	Leucylleucyllysine	18222159	Organic acids and derivatives	Carboxylic acids and derivatives	Amino acids, peptides, and analogues	Peptides	Oligopeptides
	3	2-[[2-(2,6-Diaminohexanoylamino)-4-methylpentanoyl]amino]-4-methylpentanoic acid	18222510	Organic acids and derivatives	Carboxylic acids and derivatives	Amino acids, peptides, and analogues	Peptides	Oligopeptides
34	1	(E)-4,5-Dihydroxy-11-[3-(methoxymethyl)-4-oxooctan-2-yl]-2,3,5,7-tetramethylundec-2-enoic acid	88601011	Lipids and lipid-like molecules	Fatty Acyls	Fatty acids and conjugates	Long-chain fatty acids	-
	2	Methyl 11-(3-methoxymethyl-4-oxo-2-oxetanyl)-4,5-dihydroxy-3,5,7-trimethyl-2-undecenoate	54523016	Not found	Not found	Not found	Not found	Not found
	3	5,6-Dihydroxyprostaglandin E1	6444125	No data available	No data available	No data available	No data available	No data available
35		No relevant fragmentation data could be acquired, for which structural elucidation was not possible	-	-	-	-	-	-



36	No relevant fragmentation data could be acquired, for which structural elucidation was not possible	-	-	-	-	-	-
37	No candidate structures could be retrieved for the assigned chemical formula	-	-	-	-	-	-

**Table S2. The area under the curve for RT, HR, RR, TNF- $\alpha$ , and IL-6 in the LPS, DEX, FO, and CUR groups.**

Item	Groups <sup>1</sup>					P-Value
	LPS	FO	CUR	DEX	SEM	
RT <sup>2</sup>	937.4	936.1	937.7	935.3	1.44	0.68
HR <sup>3</sup>	2364	2424	2493	2300	151.6	0.58
RR <sup>4</sup>	336.8	332.8	329.2	318.6	27.1	0.89
TNF- $\alpha$ <sup>5</sup>	23.9 <sup>a</sup>	21.6 <sup>a</sup>	20.8 <sup>a</sup>	9.2 <sup>b</sup>	3.43	<0.01
IL-6 <sup>6</sup>	57.7 <sup>a</sup>	54.3 <sup>a</sup>	52.8 <sup>a</sup>	16.9 <sup>b</sup>	7.35	<0.01

<sup>a,b</sup> Values with different superscripts are significantly different ( $P < 0.01$ ).

<sup>1</sup>Groups: LPS = positive control; FO = 350 mg/kg BW per day fish oil + LPS; CUR = 4 mg/kg BW per day nanocurcumin + LPS; DEX = 0.3 mg/kg BW dexamethasone + LPS. <sup>2</sup>RT = rectal temperature, AUC<sub>0-24h</sub> ( $^{\circ}\text{C} \times \text{h}$ ). <sup>3</sup>HR = heart rate, AUC<sub>0-24h</sub> (bpm  $\times$  h). <sup>4</sup>RR = respiratory rate, AUC<sub>0-6h</sub> (bpm  $\times$  h). <sup>5</sup> TNF- $\alpha$  = tumor necrotic factor  $\alpha$ , AUC<sub>0-4h</sub> (ng/mL  $\times$  h). <sup>6</sup>IL-6 = interleukin-6, AUC<sub>0-6h</sub> (ng/mL  $\times$  h).