

1 Distinct global metabolomic profile of the model organism *Caenorhabditis elegans* during
2 the interaction of *Staphylococcus aureus* and *Salmonella enteric* Serovar Typhi
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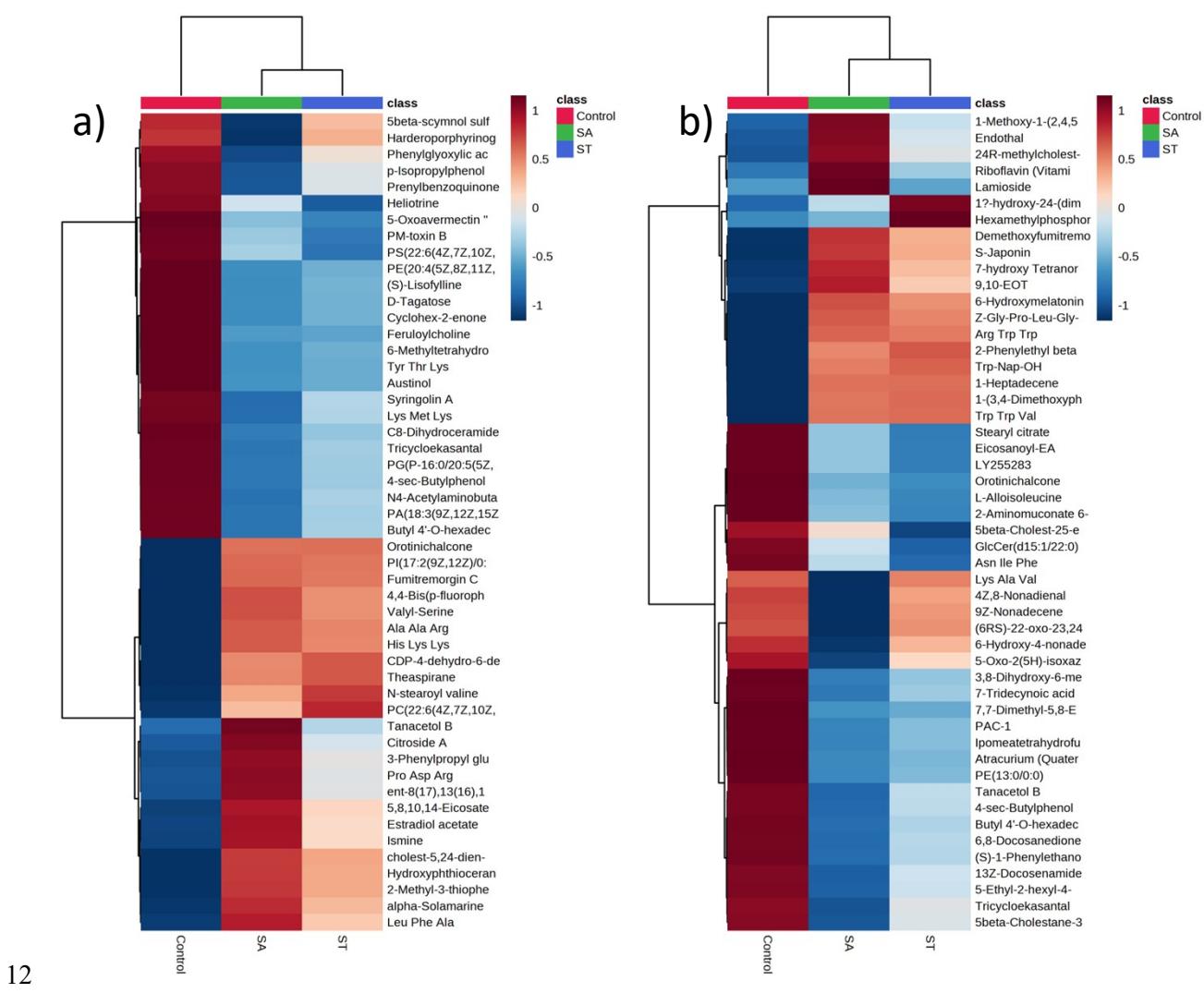
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8 **Supplementary files:**

9 **Supplementary Figure 1: Heatmap of significantly differ in expression pattern of top 50**
10 **metabolites of a) endo-metabolome and b) exo-metabolome of *E. coli* OP50 exposed, *S.***
11 ***aureus* exposed and *S. Typhi* exposed *C. elegans* (SA- *S. aureus*, ST- *S. Typhi*)**

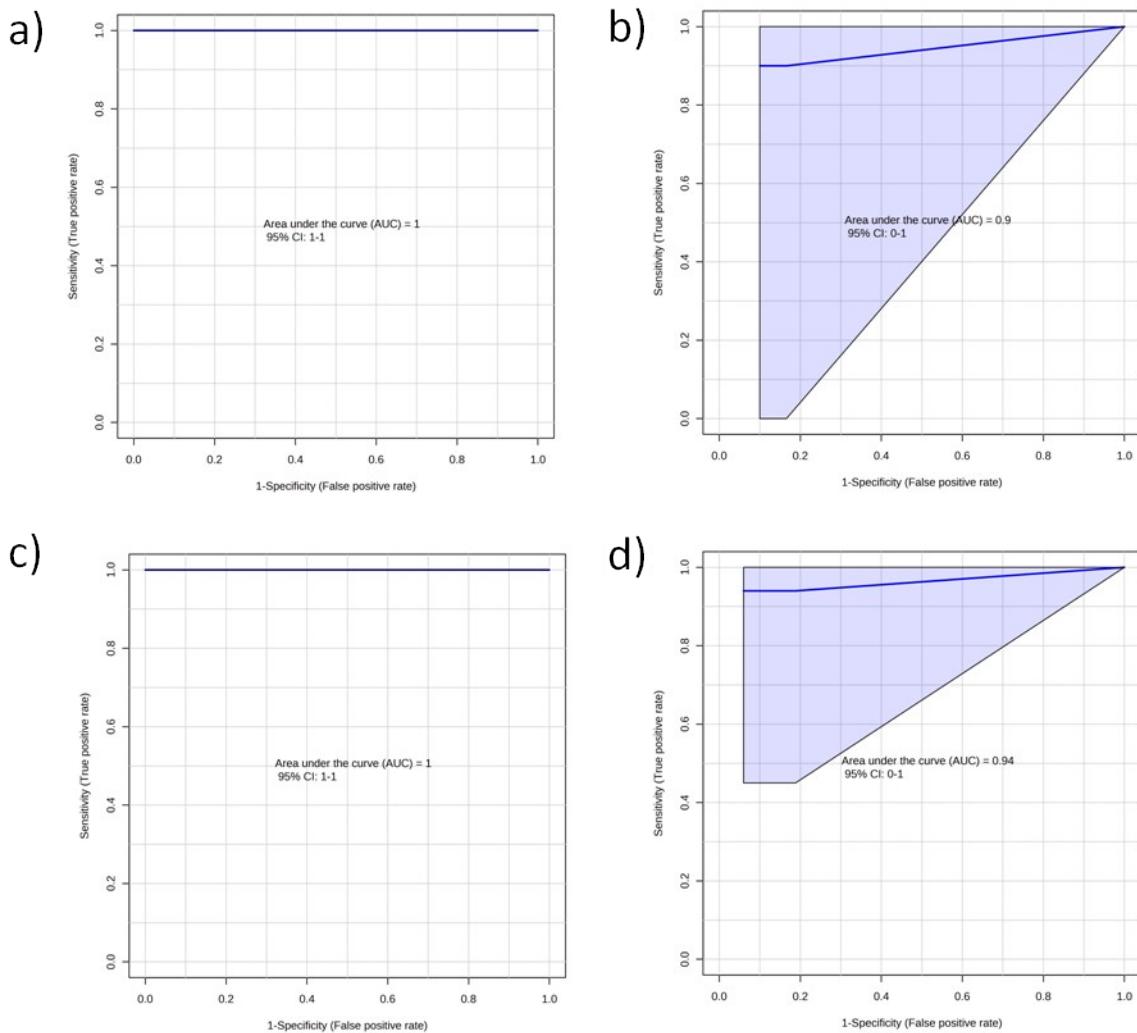


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15 **Supplementary Figure 2: Multivariate ROC analysis of 100 features (Cross validation performance) with 95 % confident interval. ROC analysis of 100 features of endo-metabolome of a) *S. aureus* & b) *S. Typhi* exposed *C. elegans*; exo-metabolome of c) *S. aureus* & d) *S. Typhi* exposed *C. elegans*.**



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21 **Supplementary table 1: Metabolites found exclusively in endo- and exo-metabolome of *E.***

22 ***coli* OP50 exposed, *S. aureus* exposed and *S. Typhi* exposed *C. elegans***

23 **(A separate file has been attached)**

24 **Supplementary Table 2: Enriched metabolic pathways and most abundant identified**

25 **metabolites [endo- & exo- metabolome of *E. coli* OP50 exposed, *S. aureus* exposed and *S.***

26 ***Typhi* exposed *C. elegans***

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Common Endo-metabolites of candidate pathogenic bacteria exposed *C. elegans* & *E. coli* OP50 fed *C. elegans*

Metabolism	Compounds identified
Purine metabolism	Guanine, Guanosine, Adenosine diphosphate ribose, Adenine, 5-Aminoimidazole ribonucleotide, Deoxyadenosine
Arginine and proline metabolism	S-Adenosylmethioninamine, Spermidine, N4-Acetylaminobutanal, Pyrroline hydroxycarboxylic acid
Thiamine metabolism	Thiamine, Thiamine monophosphate
Sphingolipid metabolism	Sphingosine, 3-O-Sulfogalactosylceramide, Phytosphingosine
Drug metabolism - other enzymes	5-Fluorouridine, NPC, Isonicotinic acid
D-Arginine and D-ornithine metabolism	2-Oxoarginine
Phosphonate and phosphinate metabolism	Phosphocholine
Glycerophospholipid metabolism	Phosphorylcholine, Glycerophosphocholine
Caffeine metabolism	Paraxanthine
Tryptophan metabolism	Melatonin, 2-Aminomuconic acid semialdehyde
Histidine metabolism	N-Formyl-L-aspartate
Pentose and glucuronate interconversions	L-Threo-2-pentulose or L Xylulose
Selenocompound metabolism	Methylselenopyruvate
Ether lipid metabolism	Glycerophosphocholine
beta-Alanine metabolism	Spermidine
Lysine degradation	Saccharopine
Folate biosynthesis	Dihydropteroic acid
Galactose metabolism	D-Tagatose 1,6-bisphosphate
Glutathione metabolism	Spermidine
Cysteine and methionine metabolism	S-Adenosylmethioninamine
N-Glycan biosynthesis	N-Acetyl-D-glucosaminylidiphosphodolichol
Tyrosine metabolism	Tyramine
Drug metabolism - cytochrome P450	p-Hydroxyfelbamate
Metabolism of xenobiotics by cytochrome P450	2-(S-Glutathionyl)acetyl chloride

Steroid hormone biosynthesis

2-Methoxyestrone 3-glucuronide

Common Exo-metabolites of candidate pathogenic bacteria exposed *C. elegans* and *E. coli* OP50 fed *C. elegans*

Sphingolipid metabolism	Sphingosine, Phytosphingosine
D-Arginine and D-ornithine metabolism	2-Oxoarginine
Purine metabolism	Guanine, Adenine, Deoxyadenosine
Phosphonate and phosphinate metabolism	Phosphocholine
Glycerophospholipid metabolism	Phosphocholine, Glycerophosphocholine
Arginine and proline metabolism	N4-Acetylaminobutanal, Pyrroline hydroxycarboxylic acid
Drug metabolism - other enzymes	NPC, Isonicotinic acid
Tryptophan metabolism	2-Aminomuconic acid 6-semialdehyde, 6-Hydroxymelatonin
Histidine metabolism	N-Formyl-L-aspartate
Pentose and glucuronate interconversions	L-Threo-2-pentulose
Ether lipid metabolism	Glycerophosphocholine
Pentose phosphate pathway	6-Phosphoglucono-D-lactone
Steroid hormone biosynthesis	Tetrahydrocortisone, 2-Methoxyestrone 3-glucuronide
N-Glycan biosynthesis	N-Acetyl-D-glucosaminylidiphosphodolichol
Drug metabolism - cytochrome P450	p-Hydroxyfelbamate

Exclusive in *E. coli* OP50 fed *C. elegans*' endo-metabolome and not in endo-metabolome candidate pathogenic bacteria exposed *C. elegans*

Purine metabolism	2-(Formamido)-N1-(5-phospho-D-ribosyl)acetamidine, Deoxyninosine, Hypoxanthine, Inosine triphosphate, 2'-Deoxyinosine triphosphate, 5-hydroxy-2-oxo-4-ureido-2,5-dihydro-1H-imidazole-5-carboxylate, Urea
Phenylalanine, tyrosine and tryptophan biosynthesis	Phenylpyruvic acid
Porphyrin and chlorophyll metabolism	Protoporphyrin IX, Coproporphyrinogen I
Drug metabolism - other enzymes	Irinotecan, alpha-Fluoro-beta-alanine
Vitamin B6 metabolism	2-Oxo-3-hydroxy-4-phosphobutanoic acid
Phenylalanine metabolism	Phenylpyruvic acid
Biotin metabolism	Biotin

Steroid hormone biosynthesis	21-Hydroxypregnенолоне, Эстрон сульфат, 2-Метоксиэстрон 3-глюкуронид
Arginine biosynthesis	Уреа
Pentose and glucuronate interconversions	D-Хилитол
Terpenoid backbone biosynthesis	Фарнезилцистеин
Galactose metabolism	Галактосиглицерол
Glycine, serine and threonine metabolism	Бетаин альдегид
N-Glycan biosynthesis	Доличил b-D-глюкозил фосфат
Tryptophan metabolism	5-Метоксихиндолацетат
Tyrosine metabolism	Эпинефрин

Exclusive in *E. coli* OP50 exposed *C. elegans*' exo-metabolome and not in exo-metabolome of candidate pathogenic bacteria exposed *C. elegans*

Pantothenate and CoA biosynthesis	Пантetheine 4'-фосфат, Пантоthenic acid, D-4'-Phosphopantothенate, Уреа
Vitamin B6 metabolism	Пиридоксал 5'-фосфат, 2-Оксо-3-гидрокси-4-фосфобутаноic acid
Biotin metabolism	Биотин, Биогутидин
Arginine biosynthesis	L-Глутамин, Уреа
Purine metabolism	L-Глутамин, Дехиокинозин, Гипоксантина, Уреа
Phenylalanine, tyrosine and tryptophan biosynthesis	Фенилпирувич acid
Steroid hormone biosynthesis	21-Hydroxypregnенолоне, 5-Андростенедиол, Эстрон сульфат, 2-Метоксиэстрон 3-глюкуронид
D-Glutamine and D-glutamate metabolism	L-Глутамин
Nitrogen metabolism	L-Глутамин
Ubiquinone and other terpenoid-quinone biosynthesis	Витамин K1
Pyrimidine metabolism	L-Глутамин, Уреа
N-Glycan biosynthesis	Доличил фосфат D-манноза, Dolichyl b-D-глюкозил фосфат
Drug metabolism - other enzymes	Иринотекан, alpha-Флуоро-beta-аланин
Caffeine metabolism	Кафеин
Phenylalanine metabolism	Фенилпирувич acid

Glycosylphosphatidylinositol (GPI)-anchor biosynthesis	Dolichyl phosphate D-mannose
Mannose type O-glycan biosynthesis	Dolichyl phosphate D-mannose
Pentose and glucuronate interconversions	D-Xylitol
beta-Alanine metabolism	Uracil
Sphingolipid metabolism	Ceramide (d18:1/12:0)
Alanine, aspartate and glutamate metabolism	L-Glutamine
Glyoxylate and dicarboxylate metabolism	L-Glutamine
Fatty acid elongation	3-Oxotetradecanoyl-CoA
Arginine and proline metabolism	4-Hydroxyproline
Fatty acid degradation	3-Oxotetradecanoyl-CoA
Tryptophan metabolism	5-Hydroxy-L-tryptophan
Aminoacyl-tRNA biosynthesis	L-Glutamine
Drug metabolism - cytochrome P450	Citalopram aldehyde
Metabolism of xenobiotics by cytochrome P450	Aflatoxin B1exo-8,9-epoxide-GSH

Exclusive in *S. aureus* exposed *C. elegans* endo-metabolome not in endo-metabolome of *E. coli* OP50 & *S. Typhi* exposed *C. elegans*

alpha-Linolenic acid metabolism	3-Oxo-OPC8-CoA, trans-2-Enoyl-OPC6-CoA
Ubiquinone and other terpenoid-quinone biosynthesis	Vitamin K1
One carbon pool by folate	Folic acid
Glycerolipid metabolism	TG(10:0/10:0/10:0)
Pentose and glucuronate interconversions	L-Arabinose
Selenocompound metabolism	Selenomethionine
Pyruvate metabolism	Acetylphosphate
Propanoate metabolism	Propinol adenylate
Folate biosynthesis	Folic acid
Porphyrin and chlorophyll metabolism	Cob(I)yrinatea,c diamide
Pyrimidine metabolism	Thymine

Drug metabolism - cytochrome P450	2-Ethylidene-1,5-dimethyl-3,3-diphenylpyrrolidine
Steroid hormone biosynthesis	Deoxycorticosterone
Exclusive in <i>S. aureus</i> exposed <i>C. elegans</i> exo-metabolome not in exo-metabolome of <i>E. coli</i> OP50 & <i>S. Typhi</i> exposed <i>C. elegans</i>	
Terpenoid backbone biosynthesis	Dimethylallylpyrophosphate
beta-Alanine metabolism	Spermidine
Glutathione metabolism	Spermidine
Arginine and proline metabolism	Spermidine
Exclusive in <i>S. Typhi</i> exposed <i>C. elegans</i> endo-metabolome not in endo-metabolome of <i>E. coli</i> OP50 & <i>S. aureus</i> exposed <i>C. elegans</i>	
Drug metabolism - cytochrome P450	4-Glutathionyl cyclophosphamide, Alcophosphamide, Citalopram propionic acid
Arginine and proline metabolism	Phosphocreatine, 4-Guanidinobutanoic acid
Biotin metabolism	Biocytin
alpha-Linolenic acid metabolism	trans-2-Enoyl-OPC4-CoA
Arginine biosynthesis	N-Acetylglutamic acid
Histidine metabolism	3-Methylhistidine
Terpenoid backbone biosynthesis	Dimethylallylpyrophosphate
Pentose phosphate pathway	6-Phosphonoglucono-D-lactone
Phosphatidylinositol signaling system	1D-myo-Inositol 1,5-bis(diphosphate) 2,3,4,6-tetrakisphosphate
Porphyrin and chlorophyll metabolism	Porphobilinogen
Fatty acid elongation	Lauroyl-CoA
Fatty acid degradation	Lauroyl-CoA
N-Glycan biosynthesis	Dolichyl b-D-glucosyl phosphate
Tryptophan metabolism	6-Hydroxymelatonin
Purine metabolism	Deoxyadenosine triphosphate
Steroid hormone biosynthesis	Androsterone glucuronide
Exclusive in <i>S. Typhi</i> exposed <i>C. elegans</i> exo-metabolome not in exo-metabolome of <i>E. coli</i> OP50 & <i>S. aureus</i> exposed <i>C. elegans</i>	
Selenocompound metabolism	Selenomethionine, Trimethylselenonium
Steroid hormone biosynthesis	Tetrahydrocortisol, Androsterone glucuronide, Dehydroepiandrosterone

alpha-Linolenic acid metabolism	OPC4-CoA
Pantothenate and CoA biosynthesis	Pantetheine
Phosphatidylinositol signaling system	Phosphatidylinositol-3,4,5-trisphosphate
Inositol phosphate metabolism	Phosphatidylinositol-3,4,5-trisphosphate
Drug metabolism - other enzymes	5-Fluorouridine
Tryptophan metabolism	Melatonin
Tyrosine metabolism	Tyramine
Drug metabolism - cytochrome P450	4-Glutathionyl cyclophosphamide
Purine metabolism	5-Aminoimidazole ribonucleotide

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29 **Supplementary table 3: The significantly upregulated and downregulated metabolites of**
 30 **endo-metabolome during candidate pathogenic bacteria interaction than the control (*E.***
 31 ***coli* OP50 exposed *C. elegans*)**

Compound name (Up regulated in SA exposure)	Fold change (log 10)	Compound name (Down regulated in SA exposure)	Fold change (log 10)	Compound name (Up regulated in ST exposure)	Fold change (log 10)	Compound name (Down regulated in ST exposure)	Fold change (log 10)
2-Methyl-3-thiophenethiol	0.584736	(S)-Lisofylline	-1.71503	2-Methyl-3-thiophenethiol	0.463019	(S)-Lisofylline	-1.33066
3-Phenylpropyl glucosinolate	0.690747	4-sec-Butylphenol	-3.50211	3-Phenylpropyl glucosinolate	0.036654	4-sec-Butylphenol	-1.5261
4,4-Bis(p-fluorophenyl)butyric acid	0.291838	5beta-scymnol sulfate	-2.16221	4,4-Bis(p-fluorophenyl)butyric acid	0.208235	5beta-scymnol sulfate	-0.35263
5,8,10,14-Eicosatetraenoic acid, 12-hydroxy-, (E,Z,Z,Z)-; 12-HETE; 12-Hydroxy-5,8,10,14-eicosatetraenoic acid; 12-Hydroxyeicosatetraenoic acid	0.911476	5-Oxoavermectin "1b" aglycone	-0.93058	5,8,10,14-Eicosatetraenoic acid, 12-hydroxy-, (E,Z,Z,Z)-; 12-HETE; 12-Hydroxy-5,8,10,14-eicosatetraenoic acid; 12-Hydroxyeicosatetraenoic acid	0.325073	5-Oxoavermectin "1b" aglycone	-0.14162
Ala Ala Arg	0.332969	6-Methyltetrahydropterin	-1.29108	Ala Ala Arg	0.294183	6-Methyltetrahydropterin	-1.20552
alpha-Solamarine	0.430817	Austinol	-1.6803	alpha-Solamarine	0.27594	Austinol	-1.43394
CDP-4-dehydro-6-deoxy-D-glucose	0.295421	Butyl 4'-O-hexadecanoyl-neohesperidoside	-2.59356	CDP-4-dehydro-6-deoxy-D-glucose	0.445594	Butyl 4'-O-hexadecanoyl-neohesperidoside	-1.08807
		C8-Dihydroceramide				C8-Dihydroceramide	-1.60567
		Cyclohex-2-enone				Cyclohex-2-enone	-1.14363

cholest-5,24-dien-3beta-ol 3-O-beta-D-glucopyranoside	0.43896	C8-Dihydroceramide	-2.11284	cholest-5,24-dien-3beta-ol 3-O-beta-D-glucopyranoside	0.344063	D-Tagatose	-1.5429
Citroside A	0.847243	Cyclohex-2-enone	-1.20331	Citroside A	0.052325	Feruloylcholine	-1.14838
ent-8(17),13(16),14-Labdatrien-18-oic acid	1.119253	D-Tagatose	-2.10021	ent-8(17),13(16),14-Labdatrien-18-oic acid	0.256008	Harderoporphyrinogen	-0.28927
Estradiol acetate	0.492893	Feruloylcholine	-1.32584	Estradiol acetate	0.040643	Heliotrine	-1.5321
Fumitremorgin C	0.243259	Harderoporphyrinogen	-2.27447	Fumitremorgin C	0.335692	Lys Met Lys	-1.37724
His Lys Lys	0.426283	Heliotrine	-0.90589	His Lys Lys	0.316375	N4-Acetylaminobutanal	-1.31069
Hydroxyphthioceranic acid (C39)	0.890869	Lys Met Lys	-2.03929	Hydroxyphthioceranic acid (C39)	0.637303	PA(18:3(9Z,12Z,15Z)/17:2(9Z,12Z))	-1.26358
Ismine	0.455505	N4-Acetylaminobutanal	-1.93232	Ismine	0.057552	PG(P-16:0/20:5(5Z,8Z,11Z,14Z,17Z))	-1.10612
Leu Phe Ala	0.696486	PA(18:3(9Z,12Z,15Z)/17:2(9Z,12Z))	-1.62984	Leu Phe Ala	0.318072	Phenylglyoxylic acid	-0.57203
N-stearoyl valine	0.024244	PG(P-16:0/20:5(5Z,8Z,11Z,14Z,17Z))	-2.01468	N-stearoyl valine	0.247816	p-Isopropylphenol	-0.67252
Orotinichalcone	0.977633	Phenylglyoxylic acid	-1.78879	Orotinichalcone	1.02651	PM-toxin B	-1.28172
PC(22:6(4Z,7Z,10Z,13Z,16Z,19Z)/13:0)	0.192519	p-Isopropylphenol	-4.29213	PC(22:6(4Z,7Z,10Z,13Z,16Z,19Z)/13:0)	0.585626	Prenylbenzoquinone	-0.52132
PE(22:6(4Z,7Z,10Z,13Z,16Z,19Z)/15:0)	0.049322	PM-toxin B	-1.11612	PE(22:6(4Z,7Z,10Z,13Z,16Z,19Z)/15:0)	0.63848	PS(22:6(4Z,7Z,10Z,13Z,16Z,19Z)/18:0)	-1.44835
PI(17:2(9Z,12Z)/0:0)	0.315335	Prenylbenzoquinone	-3.17291	PI(17:2(9Z,12Z)/0:0)	0.333648	Syringolin A	-1.05657
Pro Asp Arg	0.351919	PS(22:6(4Z,7Z,10Z,13Z,16Z,19Z)/18:0)	-1.03664	Theaspirane	0.958223	Tricycloekasantal	-1.7397
Tanacetol B	0.456605	Syringolin A	-2.08308	Valyl-Serine	0.449849	Tyr Thr Lys	-1.4578
Theaspirane	0.678695	Tricycloekasantal	-2.88689			Pro Asp Arg	-0.13271
Valyl-Serine	0.564426	Tyr Thr Lys	-1.64205			Tanacetol B	-0.25358

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33 **Supplementary table 4: The significantly upregulated and downregulated metabolites of exo-metabolome during candidate pathogenic bacteria interaction than the control (*E. coli* OP50 exposed *C. elegans*).**

Compound name (Up regulated in SA exposure)	Fold change (log 10)	Compound name (Down regulated in SA exposure)	Fold change (log 10)	Compound name (Down regulated in ST exposure)	Fold change (log 10)	Compound name (Up regulated in ST infected)	Fold change (log 10)
1-(3,4-Dimethoxyphenyl)-1,2-ethanediol 1-O-b-D-glucoside	0.428786	(6RS)-22-oxo-23,24,25,26,27-pantanorvitamin D3 6,19-sulfur dioxide adduct / (6RS)-22-oxo-23,24,25,26,27-pantanorcholecalciferol 6,19-sulfur dioxide adduct	-1.93672	(6RS)-22-oxo-23,24,25,26,27-pantanorvitamin D3 6,19-sulfur dioxide adduct / (6RS)-22-oxo-23,24,25,26,27-pantanorcholecalciferol 6,19-sulfur dioxide adduct	-0.08874	1-(3,4-Dimethoxyphenyl)-1,2-ethanediol 1-O-b-D-glucoside	0.351605
1-Heptadecene	0.452724	(S)-1-Phenylethanol	-2.22319	(S)-1-Phenylethanol	-0.472	1-Heptadecene	0.330151
1-Methoxy-1-(2,4,5-trimethoxyphenyl)-2-propanol	0.965471	13Z-Docosenamide	-2.62022	13Z-Docosenamide	-1.27589	1-Methoxy-1-(2,4,5-trimethoxyphenyl)-2-propanol	0.042796

,26-nonol		(dimethoxyphosphoryl)-25,26,27-trinorcholecalciferol				
2-Phenylethyl beta-D-glucopyranoside	0.257579	2-Aminouconate 6-semialdehyde	-0.95941	3,8-Dihydroxy-6-methoxy-7(11)-eremophilene-12,8-olide	-1.33323	2-Phenylethyl beta-D-glucopyranoside 0.328514
6-Hydroxymelatonin	0.283146	3,8-Dihydroxy-6-methoxy-7(11)-eremophilene-12,8-olide	-1.48411	4-sec-Butylphenol	-0.63387	6-Hydroxymelatonin 0.160474
7-hydroxy Tetranorlloprost	0.709466	4-sec-Butylphenol	-2.69327	4Z,8-Nonadienal	-0.2823	7-hydroxy Tetranorlloprost 0.267326
9,10-EOT	0.930467	4Z,8-Nonadienal	-1.06848	5beta-Cholest-25-ene-3alpha,7alpha,12alpha,26-tetrol	-1.65311	9,10-EOT 0.326302
Arg TrpTrp	0.22936	5beta-Cholest-25-ene-3alpha,7alpha,12alpha,26-tetrol	-0.4481	5beta-Cholestane-3alpha,26-diol	-0.86506	Arg TrpTrp 0.15541
Demethoxyfumitremorigin C	0.523887	5beta-Cholestane-3alpha,26-diol	-1.46482	5-Ethyl-2-hexyl-4-methyloxazole	-0.32983	Demethoxyfumitrem origin C 0.199925
Lamioside	0.476462	5-Ethyl-2-hexyl-4-methyloxazole	-3.75027	5-Oxo-2(5H)-isoxazolepropanenitrile	-0.46799	1alpha-hydroxy-24-(dimethoxyphosphoryl)-25,26,27-trinorvitamin D3 / 1alpha-hydroxy-24-(dimethoxyphosphoryl)-25,26,27-trinorcholecalciferol 0.591177
Riboflavin (Vitamin B2)	0.601615	5-Oxo-2(5H)-isoxazolepropanenitrile	-1.13671	6,8-Docosanedione	-1.15321	S-Japonin 0.394269
S-Japonin	1.054933	6,8-Docosanedione	-2.29053	6-Hydroxy-4-nonadecanone	-0.26873	TrpTrp Val 0.230647
TrpTrp Val	0.280488	6-Hydroxy-4-nonadecanone	-1.74213	7,7-Dimethyl-5,8-Eicosadienoic Acid	-1.11901	Trp-Nap-OH 0.228575
Trp-Nap-OH	0.236097	7,7-Dimethyl-5,8-Eicosadienoic Acid	-1.50148	7-Tridecynoic acid	-1.3257	Z-Gly-Pro-Leu-Gly-Pro 0.010976
Z-Gly-Pro-Leu-Gly-Pro	0.135713	7-Tridecynoic acid	-1.334	9Z-Nonadecene	-0.06466	
		9Z-Nonadecene	-1.92597	Asn Ile Phe	-2.39073	
		Asn Ile Phe	-1.58698	Atracurium (Quaternary acid)	-1.78443	
				Butyl 4'-O-hexadecanoyl-neohesperidoside	-1.15873	
				Butyl 4'-O-hexadecanoyl-neohesperidoside	-2.74982	Eicosanoyl-EA -2.54928
				Eicosanoyl-EA	-1.98939	GlcCer(d15:1/22:0) -2.44808
				GlcCer(d15:1/22:0)	-1.04321	Ipomeatetrahydrofuran -1.20838
				Hexamethylphosphoramido	-0.1967	L-Alloisoleucine -1.34798
				Ipomeatetrahydrofuran	-1.77517	LY255283 -1.28955
				L-Alloisoleucine	-1.24423	Lys Ala Val -0.03017
				LY255283	-1.06476	Orotinichalcone -2.23979
				Lys Ala Val	-1.75849	PAC-1 -2.04836
				Orotinichalcone	-1.89731	PE(13:0/0:0) -2.30978
				PAC-1	-2.22259	Stearyl citrate -1.53054
				PE(13:0/0:0)	-2.76055	Tanacetol B -0.8456
				Stearyl citrate	-0.69271	Tricycloekasantal -0.23168
				Tanacetol B	-1.17684	Lamioside -0.42487
				Tricycloekasantal	-3.46125	Riboflavin (Vitamin B2) -0.18396
				24R-methylcholest-22E-en-3beta,4beta,5alpha,6alpha,8beta,14alpha,15alpha,25R,26-nonol	-0.0027	

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