

Supplement of Biogeosciences, 13, 2077–2092, 2016
<http://www.biogeosciences.net/13/2077/2016/>
doi:10.5194/bg-13-2077-2016-supplement
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Supplement of

A multiproxy approach to understanding the “enhanced” flux of organic matter through the oxygen-deficient waters of the Arabian Sea

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1 **Table S1.** Amino acid multiple reaction monitoring transitions (MRM) and the transitions for the
 2 isotopically-labelled internal standards used for amino acid quantification. RT is retention time in
 3 minutes. Amino Acid* designates isotopically-labelled amino acid.

Amino Acid	MW g/mol	MRM	RT (min)	Amino Acid*	MRM transition	Isotopic labeling
Alanine	89.09	90 → 44	3.5	Alanine*	93 → 46	D ³
Arginine	174.2	175 → 70	7.5	Arginine*	182 → 76	D ⁷
Aspartate	133.1	134 → 74	2.7	Aspartate*	137 → 74 137 → 90	D ³
Glutamate	147.13	148 → 84	3.4	Glutamate*	151 → 87	D ³
Glycine	75.07	76 → 30	2.9	Glycine*	78 → 31	D ²
Histidine	155.15	156 →	5.6	Histidine*	157 → 111	-
Isoleucine	131.17	132 → 86	9.1	Isoleucine*	133 → 86	N ¹⁵
Leucine	131.17	132 → 86	9.5	Leucine*	-	-
Lysine	146.19	147 → 84	6.4	Lysine*	151 → 87	D ⁴
Methionine	149.2	150 → 104	7.5	Methionine*	153 → 106	D ³
Phenylalanine	165.49	166 → 120	10.3	Phenylalanine*	174 → 128	D ⁸
Proline	115.13	116 → 70	4.4	Proline*	123 → 76	D ⁷
Serine	105.09	106 → 60	2.8	Serine*	109 → 62	D ³
Threonine	119.12	120 →	10.3	Threonine*	121 → 74	N ¹⁵
Tryptophan	204.23	205 → 188	-	-	-	-
Tyrosine	181.19	182 → 136	8.2	Tyrosine*	184 → ?	D ²
Valine	117.15	118 → 72	7.0	Valine*	126 → 79 (or 80)	D ⁸

1 **Table S2.** Targeted peptidomic peptides and associated proteins.

Peptide Name	Process	Sequence (N- to C-Term)
Hydrazine Hydrolase 1a	anammox	ITFGDRK
Hydrazine Hydrolase 1b	anammox	FLTQDER
Hydrazine Hydrolase 1c	anammox	WINTFTAGK
Hydrazine Hydrolase 1d	anammox	SSSNSGTAFQQR
Hydrazine Hydrolase 2a	anammox	DPGFVFR
Hydrazine Hydrolase 2b	anammox	EFDTPTLR
Hydrazine Hydrolase 2c	anammox	ALEFTGSPFR
Hydrazine Hydrolase 2d	anammox	NADGSLTEAQKR
Hydrazine Hydrolase 3a	anammox	VGDWPSGIK
Hydrazine Hydrolase 3b	anammox	SIYTSYDGPGR
Hydroxylamine Oxidoreductase 1a	anammox	YRETFK
Hydroxylamine Oxidoreductase 1b	anammox	TGESGEFR
Hydroxylamine Oxidoreductase 1c	anammox	DEVSRSPNIK
Hydroxylamine Oxidoreductase 1d	anammox	ENLQAMDESVK
N2O Reductase 1	denitrification	VLGVPSMR
N2O Reductase 2	denitrification	ILGIPSMR
N2O Reductase 3	denitrification	GNAYTTLFIDSQVVK
Cytochrome c nitrite reductase (nrfA) 1	dnra	SPDVPR
Cytochrome c nitrite reductase (nrfA) 2	dnra	SPDVAR
Cytochrome c nitrite reductase (nrfA) 3	dnra	AQEALGMDMEK
Histone H4 1	diatom marker	ISGLIYEETR
Histone H4 2	diatom marker	DNIQGITKPAIR
ABC Transporter 1	bacterial marker	AVAAAVLGDANK
ABC Transporter 2	bacterial marker	DSGITSTSQFK