

ONLINE SUPPLEMENTAL MATERIAL to

DNA methylation potential: dietary intake and blood concentrations of one-carbon metabolites and cofactors in rural African women

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Supplemental Table S1: Food composition tables for one-carbon metabolites and cofactors of common Gambian foods assessed (composition per 100g)

Ingredient	N	Folate (μg)¹	Methionine (g)²	B12 (μg)^{1,4}	Riboflavin (mg)²	B6 (mg)²	Choline (mg)³	Betaine (mg)³
Atayah (green tea)	3	<5	<0.02	<0.20	<0.02	0.04	18.23	6.94
Aubergine	5	<5.0	0.05	<0.20	<0.01	<0.01	8.18	0.13
Baobab seeds	5	35	0.04	0.44	<0.05	0.04	13.36	0.89
Beans	5	82	0.36	0.39	0.03	0.18	155.80	3.83
Biscuits	5	<5.0	0.11	<0.20	<0.01	0.08	13.05	44.20
Bitter Tomato	5	11	0.03	0.24	0.02	0.05	18.03	0.04
Black pepper	4	<5.0	0.16	1.6	0.14	0.34	46.67	1.29
Bread	5	10	0.14	0.78	<0.01	0.03	12.89	44.32
Butternut squash	5	<5.0	<0.02	<0.20	<0.05	0.01	4.10	0.02
Cabbage	4	32	0.03	1.1	0.01	0.1	14.09	0.31
Cassava	5	7.2	0.03	5.9	<0.01	0.04	6.33	0.19
Chilli pepper, big	7	12	0.06	<0.20	0.14	0.4	16.63	3.23
Chilli pepper, dried	4	8.4	0.19	0.48	0.15	1.5	101.38	7.02
Coffee	5	42	0.12	1.9	<0.01	22.2	72.27	13.80
Condiments	5	<5.0	0.03	<0.20	<0.01	1.55	8.57	2.66
Egg, dry season	5	<5.0	0.3	1.2	0.22	0.03	231.57	0.83
Egg, wet season	5	13	0.48	2.9	0.36	0.05	214.30	1.06
Fish (challo), dried	4	<5.0	0.58	<0.20	0.15	0.14	50.36	27.35
Fish (challo), fresh	6	23	0.5	9.8	0.03	0.09	36.10	4.19
Fish, dried	6	9.7	0.54	21	0.08	0.11	43.84	22.93
Fish (jeja, lambasiso, tutuno, kotore), fresh	5	12	0.47	7.6	0.04	0.31	38.81	334.49
Fish (joto, furo), fresh	6	15	0.55	4.3	0.15	0.07	39.23	3.08
Fish (kujalo, kunkolongo, salango), fresh	5	15	0.65	3.4	0.07	0.07	48.95	43.04
Fish (moroko, kong, kungo, chalmoroo), fresh	5	23	0.56	17	0.07	0.17	43.19	22.26
Fish, pie	3	<5.0	0.13	1.4	<0.05	0.05	15.51	30.15
Fish, smoked	6	7.8	0.91	13	0.1	0.36	57.27	16.39
Fish (tambanjango), fresh	6	23	0.45	4.8	0.13	0.06	39.30	4.89
Garlic	3	6.8	0.06	0.37	<0.01	0.57	22.59	11.70
Groundnut, paste	6	21	0.32	0.24	<0.01	0.35	122.79	3.12
Groundnut, roasted	5	18	0.28	<0.20	<0.01	0.16	99.27	1.74
Groundnuts, cooked	7	11	0.25	<0.20	0.02	0.07	104.19	1.40

Ingredient	N	Folate (µg)¹	Methionine (g)²	B12 (µg)^{1,4}	Riboflavin (mg)²	B6 (mg)²	Choline (mg)³	Betaine (mg)³
Groundnuts, raw, dry season	5	8.4	0.25	<0.20	<0.01	0.07	106.90	1.26
Groundnuts, raw, rainy season	5	14	0.28	<0.20	<0.01	0.08	119.05	1.89
Juice powder	3	<25	<0.02	1.5	<0.05	0.06	0.17	0.11
Kola nut	4	11	0.03	<0.20	<0.01	0.02	20.77	396.33
Leaves, baobab, dry (naa)	8	55	0.2	4.6	0.33	0.75	29.71	14.95
Leaves, cassava, fresh	5	35	0.17	0.58	0.22	0.17	32.54	1.75
Leaves, jambo nduroo, dried	3	26	0.51	1.7	0.73	1.41	157.10	6.93
Leaves, jambo nduroo, fresh	4	23	0.21	0.99	0.23	0.6	28.79	2.71
Leaves, kereng kereng, fresh	4	23	0.17	1.3	0.17	0.36	25.82	1.28
Leaves, kucha, dried	3	37	0.29	31	0.7	1.1	65.23	479.77
Leaves, kucha, fresh	8	8.1	0.09	0.3	0.06	0.2	13.81	45.87
Leaves, morongo, fresh	6	32	0.19	0.58	0.28	0.19	36.80	128.10
Leaves, onion, fresh	4	38	0.05	0.54	0.06	0.09	10.65	0.91
Leaves, sweet potato, fresh	5	26	0.17	1.3	0.15	0.13	20.34	16.95
Locus beans	4	210	0.15	3.9	0.19	1.6	35.41	2.32
Macaroni	5	<5.0	0.13	<0.20	<0.01	0.05	7.16	42.66
Maize, flour	5	13	0.13	<0.20	0.13	0.11	56.07	3.60
Maize, roast	5	27	0.15	<0.20	0.04	0.16	29.27	1.20
Maize, steamed	5	6.2	0.14	<0.20	<0.05	0.09	21.33	0.87
Mango, bush, dried	3	14	0.1	<0.20	0.07	0.06	25.00	18.78
Mango, fresh	5	14	0.03	<0.20	<0.05	0.06	7.87	0.16
Margarine	6	<5.0	<0.02	<0.20	<0.05	<0.01	2.30	0.00
Mayonnaise	5	<5.0	0.03	<0.20	0.06	<0.01	2.91	0.00
Meat beef, wet season	5	<5.0	0.33	1.5	0.04	0.12	44.34	7.86
Meat chicken	3	13	0.37	7	0.06	0.1	67.41	3.46
Meat, beef, dry season	3	21	0.4	34	0.14	0.12	88.36	6.42
Meat, goat	3	24	0.73	12	0.05	0.1	84.40	14.12
Milk, condensed	5	<5.0	0.15	0.48	0.35	0.05	44.80	1.82
Milk, fresh, dry season	5	7.2	0.1	0.6	0.22	0.06	14.12	1.52
Milk, fresh, wet season	2	11	0.19	0.39	0.51	0.07	31.47	2.63
Milk, powder	4	18	0.55	2.4	0.79	0.55	165.42	6.20
Milk, sour	5	<5.0	0.13	0.39	0.31	0.06	19.57	2.63
Millet, dry season	5	32	0.16	1.2	0.19	0.17	9.12	5.70
Millet, flour	5	24	0.13	0.47	0.06	0.16	20.06	3.29
Millet, porridge	5	15	0.1	0.9	0.04	0.07	10.89	1.84
Millet, wet season	5	13	0.17	0.49	0.05	0.17	14.22	2.58
Mustard	4	<5.0	0.12	<0.20	0.01	0.02	68.65	0.66
Nyet	1	13	0.84	12	0.17	0.27	37.67	5652.3
Okra	4	19	0.04	0.22	<0.01	0.02	11.11	4.90

Ingredient	N	Folate (μg)¹	Methionine (g)²	B12 (μg)^{1,4}	Riboflavin (mg)²	B6 (mg)²	Choline (mg)³	Betaine (mg)³
Okra, powder	3	12	0.08	0.91	0.07	0.9	26.48	28.08
Onion	8	7.3	0.02	<0.20	<0.01	0.07	6.40	0.39
Palm oil	4	<5.0	<0.02	<0.20	<0.01	<0.01	0.62	0.78
Pancake	3	<5.0	0.1	0.38	<0.01	0.05	22.52	56.04
Papaya	5	8	0.02	<0.20	<0.05	0.12	6.76	0.12
Potato	4	12	0.06	0.5	<0.01	0.22	131.44	0.61
Pumpkin	5	6.6	0.02	0.41	<0.01	0.06	4.40	0.09
Rice, dempetengo (parched rice flakes)	3	13	0.18	0.97	<0.01	0.08	10.83	0.59
Rice, imported	5	10	0.21	0.89	<0.01	0.05	4.11	0.84
Rice, local	6	7.8	0.15	0.95	<0.01	0.04	3.09	0.14
Saf saf (condiment)	2	<5.0	<0.02	<0.20	<0.01	<0.01	0.00	0.00
Salt, lake	5	5.6	<0.02	<0.20	<0.01	<0.01	0.00	0.00
Sardines, canned	5	48	0.59	13	0.1	0.32	54.38	5.30
Seafood, crab, fresh	3	27	0.22	5.1	0.09	0.07	40.52	247.51
Seafood, oyster, fresh	3	13	0.33	32	0.03	<0.01	42.81	260.11
Seafood, shrimps, fresh	4	54	0.7	7.4	0.02	0.27	79.85	264.03
Seafood, shrimp, dry	3	9.9	0.71	1.4	<0.01	0.42	117.00	867.08
Sugar	4	<5.0	<0.02	0.24	<0.01	<0.01	0.00	0.58
Sweet Potato	5	7.3	0.04	0.93	<0.01	0.05	11.31	14.58
Tamarind	4	<5.0	0.04	<0.20	<0.01	0.11	7.51	0.46
Tea	5	<5.0	<0.02	<0.20	<0.02	0.02	34.30	4.44
Tomato	5	12	<0.02	<0.20	<0.01	0.16	11.37	0.16
Tomato paste	4	8.8	0.05	0.52	0.04	<0.60	44.82	0.64
Tomborungo (bush fruit)	5	<130	0.05	<0.20	<0.05	0.16	19.61	1.29
Vegetable oil	3	<5.0	<0.02	<0.20	<0.01	<0.01	0.00	0.00
Vinegar	4	<5	<0.02	<0.20	<0.01	<0.01	0.00	0.00
Wheat, flour	5	9.8	0.18	0.49	<0.01	0.04	11.71	81.22
Wonjo (hibiscus flower infusion)	3	<5	<0.02	<0.20	<0.02	<0.01	68.01	277.16

N= number of samples used for the composite sample

¹Surface Plasmon Resonance Inhibition Assay

²HPLC

³LC/ESI IDMS

⁴Vitamin B12 assay is mainly designed to measure cyanocobalamin in vitamin B12-rich and fortified foods. Since vegetables are not main target matrices for the assay, it is suspected that vegetable products can give result measurable concentrations of vitamin B12 although not containing any vitamin. This is thought to be a matrix interference effect with the binding protein-surface interaction which usually occurs in samples which are blank for vitamin B12. Additionally, the extraction procedures may not be adequate for some of the vegetable samples tested and therefore, for the dietary intake analysis, foods of vegetal origin have been given value of 0 μg .

Supplemental Figure S1: Duration of follow-up of participants and sample size of dietary and biomarker data by month/total

Participants JIFFARONG	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	Total dietary	Total biomarkers												
1													2	2												
2													9	9												
3													12	12												
4													4	0												
5													10	10												
6													1	0												
7													2	0												
8													12	12												
9													2	2												
10													12	12												
11													3	0												
12													5	0												
13													5	5												
14													6	6												
15													6	4												
16													9	9												
17													5	4												
18													3	3												
19													3	3												
20													1	0												
21													2	2												
22													2	2												
23													1	1												
24													2	2												
Total per month (Ji)	10	7	10	7	9	6	10	7	10	9	10	9	10	9	10	9	10	9	10	10	119	100				
Participants JANNEH KUNDA	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN														
25													2	2												
26													3	3												
27													2	0												
28													1	0												
29													3	2												
30													11	11												
31													12	11												
32													1	0												
33													11	11												
34													7	6												
35													11	11												
36													3	2												
37													6	6												
38													7	5												
39													9	9												
40													5	4												
41													9	9												
42													2	1												
43													4	4												
44													4	4												
45													3	3												
46													2	2												
47													1	1												
Total per month (JK)	10	7	10	9	10	8	10	9	10	10	10	9	9	9	7	10	9	10	9	10	10	10	10	118	107	
Participants KENEBA	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN														
48													10	8												
49													8	8												
50													2	1												
51													3	3												
52													12	12												
53													1	0												
54													11	11												
55													12	12												
56													12	12												
57													10	9												
58													11	11												
59													10	8												
60													8	8												
61													4	4												
62													2	2												
Total per month (Ke)	9	8	10	9	10	10	9	9	9	10	10	9	10	9	10	9	10	9	10	9	10	8	116	109		
Total per month	29	22	30	25	29	24	29	25	29	28	30	29	28	27	29	26	30	27	30	27	30	28	30	28	353	316

Dietary data Ji: Jiffarong; JK: Janneh Kunda; Ke: Keneba
 Biomarker data Total dietary/biomarkers: number of months of data analysed

The graph shows the duration of participation in the study of the different women enrolled. Women did not stay until the end of the study for different reasons such as self-withdrawal or pregnancy (n=359 person/month). The number of biomarkers is lower than the number for dietary assessments, as on some occasions it was not possible to get a blood sample, or the samples collected were rejected for other reasons (n=316;293 for riboflavin).

Exclusion criteria were: pregnancy, severe anaemia (<70 g/L), menopause, contraceptive use or planning to move away from the village during the course of the study. No woman was excluded on the basis of malaria or severe anaemia, but four women were treated for mild anaemia.