



Supplementary Figure S1. The percentage of iodine-rich processed foods in children's favorite snacks.

Supplementary Table S1. Basic information of school-age children

Baseline characteristics	n	Gender		Age			BMI (kg/m ² , mean ± SD)	
		Boys, n (%)	Girls, n (%)	8, n (%)	9, n (%)	10, n (%)		
Region	Xinjiang	804	403 (50.1)	401 (49.9)	227 (28.2)	337 (41.9)	233 (29.0)	16.0 ± 2.4
	Sichuan	804	403 (50.1)	401 (49.9)	311 (38.7)	288 (35.8)	205 (25.5)	16.3 ± 2.7
	Shanxi	822	417 (50.7)	405 (49.3)	153 (18.6)	302 (36.7)	327 (39.8)	17.2 ± 3.7
	Liaoning	800	391 (48.9)	409 (51.1)	226 (28.3)	359 (44.9)	215 (26.9)	18.1 ± 3.7
	Fujian	815	403 (49.4)	412 (50.6)	278 (34.1)	272 (33.4)	265 (32.5)	17.1 ± 3.2
	Anhui	800	399 (49.9)	401 (50.1)	247 (30.9)	280 (35.0)	273 (34.1)	17.1 ± 3.4
	Hubei	824	398 (48.3)	426 (51.7)	281 (34.1)	263 (31.9)	255 (30.9)	16.8 ± 3.2
Economical level	High	2,806	1,394 (49.7)	1,412 (50.3)	848 (30.2)	1,072 (38.2)	864 (30.8)	17.4 ± 3.6
	Low	2,864	1,420 (49.6)	1,444 (50.4)	876 (30.6)	1,029 (35.9)	909 (31.7)	16.7 ± 3.1
Geographical features	Mountain	2,030	1,010 (49.8)	1,020 (50.2)	596 (29.4)	808 (39.8)	608 (30.0)	16.7 ± 3.1
	Plain	1,825	910 (49.9)	915 (50.1)	542 (29.7)	680 (37.3)	549 (30.1)	16.8 ± 3.4
	Coastal	800	398 (49.8)	402 (50.3)	265 (33.1)	264 (33.0)	271 (33.9)	17.7 ± 3.4
	Inland	1,015	496 (48.9)	519 (51.1)	321 (31.6)	349 (34.4)	345 (34.0)	17.3 ± 3.5
Total	5,669	2,809 (49.6)	2,854 (50.4)	1,724 (30.4)	2,101 (37.1)	1,773 (31.3)	17.0 ± 3.3	

Supplementary Table S2. Effect of iodine source on iodine nutritional status of SAC

Indicators	Iodine intake	UIC ($\mu\text{g/L}$)			TVOL (mL)			
		β	<i>t</i>	<i>P</i> value	β	<i>t</i>	<i>P</i> value	
Genders	Boys	WIC	0.069	0.848	0.405	0.032	0.157	0.876
		SIC	0.752	8.528	< 0.001	-0.025	-0.114	0.911
		Processed food iodine	0.046	0.573	0.572	0.172	0.862	0.397
	Girls	Cooking food iodine	0.903	10.249	< 0.001	0.236	1.087	0.288
		WIC	-0.009	-0.096	0.924	-0.038	-0.217	0.830
		SIC	0.774	7.470	< 0.001	-0.428	-2.208	0.037
Geographic area	Urban	Processed food iodine	0.071	0.763	0.453	0.083	0.476	0.638
		Cooking food iodine	0.917	8.796	< 0.001	0.221	1.134	0.269
		WIC	-0.360	-1.044	0.317	0.095	0.278	0.786
	Rural	SIC	0.854	2.344	0.037	-0.588	-1.626	0.130
		Processed food iodine	0.696	1.588	0.138	0.124	0.284	0.781
		Cooking food iodine	0.277	0.893	0.389	-0.083	-0.271	0.791
Ages (years)	8	WIC	-0.004	-0.042	0.967	0.013	0.060	0.953
		SIC	0.727	7.384	< 0.001	-0.479	-2.123	0.050
		Processed food iodine	0.040	0.431	0.672	0.114	0.538	0.598
	9	Cooking food iodine	0.922	9.107	< 0.001	0.139	0.599	0.557
		WIC	0.152	1.302	0.206	-0.134	-0.717	0.480
		SIC	0.729	5.905	< 0.001	-0.454	-2.302	0.031
10	Processed food iodine	0.005	0.040	0.968	0.118	0.643	0.526	
	Cooking food iodine	0.719	5.816	< 0.001	0.056	0.282	0.781	
	WIC	0.040	0.335	0.741	0.043	0.248	0.806	
Total	Total	SIC	0.727	5.483	< 0.001	-0.411	-2.175	0.040
		Processed food iodine	0.140	1.180	0.250	0.114	0.673	0.507
		Cooking food iodine	0.845	6.395	< 0.001	0.278	1.477	0.153
Total	Total	WIC	0.020	0.179	0.860	-0.087	-0.488	0.630
		SIC	0.803	6.330	< 0.001	-0.435	-2.108	0.047
		Processed food iodine	0.278	2.416	0.024	0.101	0.538	0.596
Total	Total	Cooking food iodine	0.899	7.171	< 0.001	0.168	0.824	0.419
		WIC	0.037	0.461	0.649	-0.039	-0.225	0.824
		SIC	0.782	8.992	< 0.001	-0.432	-2.265	0.033
Total	Total	Processed food iodine	0.064	0.811	0.425	0.103	0.593	0.559
		Cooking food iodine	0.927	10.635	< 0.001	0.224	1.172	0.253

Note. UIC, urine iodine concentration; TVOL, thyroid volume; WIC, water iodine concentration; SIC, salt iodine concentration.

Supplementary Table S3. Effect of iodine source on thyroid disease of SAC

Indicators	Iodine intake [†]	TGR				Nodular detection rate (%)						
		β	OR	95% CI	P value	β	OR	95% CI	P value			
Genders	Boys	WIC	0.004	1.004	0.994	1.014	0.479	-0.021	0.979	0.965	0.994	0.005
		SIC	-0.001	0.999	0.995	1.002	0.484	0.001	1.001	1.000	1.002	0.184
		Processed food iodine	0.008	1.008	0.919	1.106	0.866	0.037	1.038	0.992	1.085	0.105
	Girls	Cooking food iodine	0.001	1.001	1.000	1.002	0.173	0.000	1.000	0.999	1.000	0.447
		WIC	-0.003	0.997	0.985	1.010	0.656	-0.014	0.986	0.975	0.997	0.016
		SIC	-0.005	0.995	0.992	0.998	0.001	0.000	1.000	0.999	1.002	0.523
Geographic area	Urban	Processed food iodine	-0.046	0.955	0.876	1.042	0.299	0.064	1.066	1.023	1.110	0.002
		Cooking food iodine	-0.001	0.999	0.998	1.001	0.275	0.000	1.000	0.999	1.001	0.902
		WIC	0.003	1.003	0.990	1.015	0.670	-0.014	0.986	0.975	0.997	0.016
	Rural	SIC	-0.003	0.997	0.993	1.001	0.185	0.000	1.000	0.999	1.002	0.523
		Processed food iodine	-0.101	0.904	0.802	1.019	0.100	0.064	1.066	1.023	1.110	0.002
		Cooking food iodine	0.000	1.000	0.998	1.001	0.840	0.000	1.000	0.999	1.001	0.902
Ages (years)	8	WIC	0.000	1.000	0.990	1.010	0.987	-0.023	0.977	0.965	0.990	< 0.001
		SIC	-0.003	0.997	0.994	1.000	0.023	0.001	1.001	1.000	1.002	0.113
		Processed food iodine	0.018	1.018	0.942	1.101	0.648	-0.002	0.998	0.958	1.040	0.923
	9	Cooking food iodine	0.000	1.000	0.999	1.001	0.996	0.000	1.000	1.000	1.001	0.889
		WIC	-0.001	0.999	0.983	1.015	0.906	-0.028	0.972	0.951	0.994	0.012
		SIC	-0.002	0.998	0.994	1.002	0.262	0.001	1.001	0.999	1.002	0.409
10	Processed food iodine	-0.011	0.989	0.885	1.106	0.847	0.045	1.046	0.986	1.109	0.139	
	Cooking food iodine	0.001	1.001	0.999	1.002	0.314	0.000	1.000	0.999	1.001	0.941	
	WIC	0.003	1.003	0.994	1.012	0.534	-0.014	0.986	0.972	0.999	0.038	
Total	Total	SIC	-0.003	0.997	0.993	1.001	0.115	0.001	1.001	1.000	1.002	0.211
		Processed food iodine	-0.035	0.966	0.881	1.059	0.455	0.070	1.072	1.027	1.120	0.002
		Cooking food iodine	0.000	1.000	0.998	1.001	0.774	0.000	1.000	0.999	1.001	0.671
Total	Total	WIC	-0.006	0.994	0.971	1.018	0.640	-0.012	0.988	0.974	1.002	0.083
		SIC	-0.005	0.995	0.991	0.999	0.022	0.000	1.000	0.999	1.002	0.733
		Processed food iodine	0.003	1.003	0.876	1.148	0.964	0.024	1.024	0.965	1.088	0.431
Total	Total	Cooking food iodine	0.000	1.000	0.998	1.001	0.731	-0.001	0.999	0.999	1.000	0.258
		WIC	0.001	1.001	0.993	1.009	0.896	-0.017	0.983	0.974	0.992	< 0.001
		SIC	-0.003	0.997	0.994	0.999	0.004	0.001	1.001	1.000	1.001	0.185
Total	Total	Processed food iodine	-0.020	0.980	0.920	1.044	0.535	0.051	1.053	1.022	1.085	0.001
		Cooking food iodine	0.000	1.000	0.999	1.001	0.996	0.000	1.000	0.999	1.000	0.461

Note. TGR, thyroid goiter rate; WIC, water iodine concentration; SIC, salt iodine concentration.

Supplementary Table S4. Effects of using non-iodized salt for processed foods or eating out on urinary iodine in children

Indicators	Iodized salt for processed foods		Proposed non-iodized salt for processed foods		z	P	Iodized salt for dining out		Proposed non-iodized salt for dining out		z	P	
	Total iodine intake	MUIC	Total iodine intake	MUIC			Total iodine intake	MUIC	Total iodine intake	MUIC			
	Region	Xinjiang	303.5	258.0			301.4	256.2	-23.935	< 0.001			303.5
	Sichuan	294.0	249.9	284.2	241.2	-24.579	< 0.001	294.0	249.9	175.2	148.9	-24.318	< 0.001
	Shanxi	275.9	234.5	268.8	226	-24.791	< 0.001	274.9	234.5	236.3	200.9	-16.328	< 0.001
	Liaoning	240.0	204.0	232.8	197.2	-24.090	< 0.001	240.0	204.0	176.9	150.4	-24.407	< 0.001
	Fujian	251.4	213.7	239.5	203.9	-24.716	< 0.001	250.9	213.7	226.7	192.7	-13.0	< 0.001
	Anhui	290.8	247.2	283.6	241.3	-24.457	< 0.001	290.5	247.2	213.7	181.7	-21.986	< 0.001
	Hubei	296.1	251.7	273.8	234.4	-24.822	< 0.001	296.2	251.7	187.2	159.1	-23.757	< 0.001
Genders	Boys	290.8	247.2	282.9	240.5	-45.576	< 0.001	290.7	247.2	215.5	183.2	-40.677	< 0.001
	Girls	263.9	224.3	253.9	215.8	-46.018	< 0.001	263.5	224.3	200.6	170.5	-40.790	< 0.001
Age (years)	8	263.6	224.0	253.7	215.6	-35.586	< 0.001	263.1	224.0	196.7	167.2	-31.716	< 0.001
	9	277.7	236.1	268.3	228.1	-39.454	< 0.001	277.6	236.1	213.6	181.6	-34.836	< 0.001
	10	288.8	245.5	278.6	236.8	-36.306	< 0.001	288.7	245.5	210.0	178.5	-32.317	< 0.001
Geographic area	Urban	273.1	232.2	263.2	223.7	-38.267	< 0.001	273.1	232.2	216.9	184.4	-33.135	< 0.001
	Rural	282.5	240.1	271.7	230.9	-52.253	< 0.001	281.8	240.1	202.7	172.3	-47.121	< 0.001
Economical level	High	268.9	228.6	255.1	216.8	-45.535	< 0.001	268.9	228.6	207.9	176.7	-39.588	< 0.001
	Low	288.0	244.8	281.3	239.1	-46.059	< 0.001	287.7	244.8	209.9	178.4	-41.854	< 0.001
Geographical features	Mountain	290.8	247.1	283.0	240.6	-38.919	< 0.001	290.5	247.1	205.4	174.6	-34.095	< 0.001
	Plain	298.5	253.7	287.0	243.9	-36.604	< 0.001	298.4	253.7	221.9	188.6	-33.398	< 0.001
	Coastal	244.5	207.8	233.0	198.1	-24.090	< 0.001	244.5	207.8	194.7	165.5	-22.075	< 0.001
	Inland	245.3	208.5	240.1	204.1	-27.584	< 0.001	245.2	208.5	204.5	173.5	-22.621	< 0.001
	Total	278.4	236.6	268.0	228.4	-64.764	< 0.001	278.2	236.6	209.2	177.8	-57.606	< 0.001

Note. MUIC, median of urine iodine concentration.