

Supplementary Table 1 Reference Ranges for Serum Trace Elements and Vitamins

Variables	Unit	Reference Range for male	Method
Fe	μmol/L	11.0-27.0	ICP-MS
Zn	μmol/L	10.7-17.5	ICP-MS
Mg	mmol/L	0.67-1.04	ICP-MS
Cu	μmol/L	7.8-32.2	ICP-MS
Ca	mmol/L	2.03-2.65	ICP-MS
AdCa	mmol/L	Calculated	—
VA	μmol/L	0.52–2.20	HPLC
VB1	nmol/L	50–150	HPLC
VB2	μg/L	>200	HPLC
VB6	μmol/L	14.6-72.9	HPLC
Folate (VB9)	nmol/L	6.8–36.3	HPLC
VC	μmol/L	34-114	HPLC
VE	μg/mL	10-15	HPLC
VB12 (Cobalamin)	pg/mL	200–900	HPLC
VD	nmol/L	30.0–50.0	HPLC

AdCa: Albumin-adjusted calcium; HPLC: High-performance liquid chromatography; ICP-MS: Inductively coupled plasma mass spectrometry; VA: Vitamin A; VB1: Vitamin B1 (Thiamine); VB2: Vitamin B2 (Riboflavin); VB6: Vitamin B6 (Pyridoxine); VB9: Vitamin B9 (Folate); VB12: Vitamin B12 (Cobalamin); VC: Vitamin C; VD: Vitamin D (25-hydroxyvitamin D); VE: Vitamin E.

Albumin-adjusted calcium (AdCa) was calculated using the following formula: Corrected calcium (mmol/L) = Total calcium (mmol/L) + 0.02 × [40 - albumin (g/L)].

Reference Range: The clinical reference ranges provided are based on the standard diagnostic criteria of the Clinical Laboratory at the Third Affiliated Hospital of Sun Yat-sen University for the adult male population.