

Supplementary material Changes in Parameters in the Study.

ZAH group		Baseline	4 week	8 week	12 week	16 week	20 week	24 week	52 week	P value
Serum zinc ^a (µg/dL)	Mean	52.3	77.5	91.3	91.2	89.0	88.9	86.5	83.4	<.001
	(SD)	(4.9)	(21.4)	(24.3)	(26.3)	(26.5)	(22.7)	(28.3)	(19.9)	
Serum copper ^a (µg/dL)	Mean	89.1	90.4	84.5	75.7	70.6	69.5	74.5	83.6	.003
	(SD)	(15.3)	(18.3)	(17.3)	(25.3)	(27.3)	(28.5)	(29.4)	(24.3)	
Alkaline phosphatase ^a (U/L)	Mean	84.8	88.2	94.8	91.3	88.6	90.0	93.2	80.6	.717
	(SD)	(30.2)	(28.2)	(31.2)	(30.7)	(27.8)	(28.0)	(33.8)	(28.6)	
ALT ^a (U/L)	Mean	11.3	12.5	13.5	12.3	12.9	12.0	12.4	14.3	.819
	(SD)	(5.1)	(5.6)	(5.8)	(5.7)	(5.9)	(6.0)	(5.2)	(7.9)	
AST ^a (U/L)	Mean	13.4	14.0	14.7	13.8	13.7	13.4	13.2	16.9	.985
	(SD)	(4.4)	(5.5)	(6.6)	(4.5)	(4.5)	(4.5)	(4.7)	(10.6)	
LDH ^a (U/L)	Mean	182.3	185.6	187.6	188.2	191.5	186.9	192.4	204.9	.431
	(SD)	(37.2)	(38.6)	(31.3)	(26.5)	(37.2)	(30.5)	(38.5)	(36.2)	
Total bilirubins ^a (mg/dL)	Mean	0.37	0.37	0.41	0.40	0.42	0.41	0.42	0.42	.743
	(SD)	(0.12)	(0.12)	(0.13)	(0.16)	(0.16)	(0.17)	(0.19)	(0.13)	
Serum Calcium ^a (mg/dL)	Mean	8.67	8.61	8.77	8.55	8.82	8.89	8.91	8.85	.439
	(SD)	(0.56)	(0.50)	(0.69)	(0.53)	(0.70)	(0.89)	(0.66)	(0.66)	
Serum creatinine ^a (mg/dL)	Mean	9.11	9.16	8.93	8.79	8.86	8.92	9.05	8.72	1.000
	(SD)	(2.51)	(2.62)	(2.68)	(2.66)	(2.78)	(2.85)	(2.91)	(2.95)	
Serum chloride ^a (mEq/L)	Mean	101.8	102.1	103.2	102.8	102.3	102.0	101.7	103.1	.424
	(SD)	(3.7)	(3.6)	(3.8)	(3.1)	(3.2)	(3.2)	(3.2)	(3.5)	
Serum phosphate ^a (mg/dL)	Mean	5.3	5.1	5.1	5.1	5.1	5.0	5.0	5.2	.949
	(SD)	(1.0)	(1.1)	(1.2)	(1.5)	(1.3)	(1.1)	(1.0)	(1.2)	
Serum sodium ^a (mEq/L)	Mean	139.2	139.2	140.2	139.6	139.8	139.5	138.9	139.7	.711
	(SD)	(3.1)	(3.1)	(2.6)	(2.8)	(2.3)	(3.0)	(2.9)	(3.0)	
Serum potassium ^a (mEq/L)	Mean	4.5	4.6	4.4	4.4	4.5	4.5	4.5	4.4	.992
	(SD)	(0.6)	(0.8)	(0.5)	(0.6)	(0.7)	(0.7)	(0.5)	(0.5)	
Hemoglobin ^a (g/dL)	Mean	11.3	11.4	11.3	11.2	11.1	11.3	11.7	11.3	.413
	(SD)	(1.1)	(1.1)	(0.9)	(1.0)	(1.0)	(1.0)	(1.0)	(1.2)	
Glucose ^a (mg/dL)	Mean	155.4	154.3	154.2	145.7	152.4	147.3	140.0	148.1	.865
	(SD)	(53.8)	(67.9)	(48.8)	(52.3)	(52.4)	(50.1)	(51.5)	(46.5)	
LDL-cholesterol ^a (mg/dL)	Mean	82.3	79.3	82.6	84.4	84.4	85.7	83.3	87.3	.760
	(SD)	(18.7)	(16.4)	(18.2)	(20.2)	(21.2)	(18.1)	(24.5)	(14.9)	
CRP ^a (mg/dL)	Mean	0.99	1.52	0.69	0.70	1.06	0.39	2.08	0.56	.750
	(SD)	(1.98)	(3.53)	(0.70)	(1.70)	(2.97)	(0.44)	(6.39)	(1.25)	
Total cholesterol ^a (mg/dL)	Mean	141.6	140.9	142.9	147.2	144.2	142.7	144.6	147.9	.901
	(SD)	(23.2)	(20.6)	(19.6)	(20.9)	(25.2)	(23.3)	(29.8)	(15.5)	
Total protein ^a (g/dL)	Mean	6.1	6.1	6.2	6.2	6.1	6.1	6.2	6.2	.969
	(SD)	(0.5)	(0.5)	(0.5)	(0.4)	(0.4)	(0.4)	(0.4)	(0.5)	
Serum albumin ^a (g/dL)	Mean	3.38	3.37	3.47	3.45	3.46	3.46	3.52	3.54	.409
	(SD)	(0.26)	(0.30)	(0.31)	(0.28)	(0.29)	(0.29)	(0.38)	(0.33)	
Transthyretin ^a (mg/dL)	Mean	24.7	27.0	25.0	27.8	25.9	27.0	26.9	28.7	.502
	(SD)	(5.5)	(6.7)	(4.3)	(5.6)	(6.4)	(7.3)	(7.4)	(8.1)	
Urea nitrogen ^a (mg/dL)	Mean	57.9	58.0	57.3	55.3	54.6	50.9	54.9	54.0	.591
	(SD)	(13.1)	(13.4)	(13.5)	(14.4)	(13.1)	(14.6)	(12.1)	(13.1)	
BNP ^a (pg/mL)	Mean	299.1	305.7	301.7	322.5	335.8	314.9	234.8	389.8	.665
	(SD)	(241.5)	(250.4)	(260.1)	(303.2)	(270.0)	(319.8)	(244.7)	(306.3)	
Dry body weight ^a (kg)	Mean	57.9	58.3	57.9	57.4	57.3	57.4	58.2	59.2	1.000
	(SD)	(11.3)	(11.5)	(11.8)	(12.5)	(12.5)	(12.6)	(12.6)	(14.5)	
Systolic blood pressure ^a (mmHg)	Mean	149.9	150.3	156.8	157.5	157.6	156.8	152.4	156.8	.784
	(SD)	(21.7)	(26.3)	(24.0)	(27.2)	(28.3)	(19.0)	(25.0)	(28.3)	
Diastolic blood pressure ^a (mmHg)	Mean	80.5	80.9	80.2	81.8	83.5	80.2	82.3	80.5	.965
	(SD)	(15.1)	(14.0)	(13.5)	(11.7)	(15.8)	(13.7)	(11.5)	(16.7)	

PPZ group		Baseline	4 week	8 week	12 week	16 week	20 week	24 week	52 week	P value
Serum zinc ^a (µg/dL)	Mean	52.4	68.1	77.8	77.4	79.5	77.4	80.8	79.9	<.001
	(SD)	(5.2)	(14.8)	(22.4)	(20.7)	(18.0)	(22.7)	(20.2)	(16.8)	
Serum copper ^a (µg/dL)	Mean	93.5	93.4	86.3	82.8	79.6	80.4	82.9	80.0	.016
	(SD)	(17.0)	(18.6)	(17.8)	(22.8)	(23.2)	(19.7)	(17.6)	(25.4)	
Alkaline phosphatase ^a (U/L)	Mean	83.5	91.4	87.6	90.7	96.8	86.8	87.0	86.2	.998
	(SD)	(34.1)	(43.7)	(36.8)	(44.2)	(54.7)	(40.9)	(36.1)	(37.7)	
ALT ^a (U/L)	Mean	12.3	14.2	12.1	13.1	14.3	12.3	11.8	13.7	.949
	(SD)	(5.7)	(8.2)	(7.1)	(8.2)	(10.6)	(6.6)	(5.9)	(7.7)	
AST ^a (U/L)	Mean	14.8	15.1	13.7	13.7	15.5	13.5	13.2	14.9	.971
	(SD)	(9.4)	(8.1)	(6.8)	(6.4)	(9.5)	(5.7)	(6.1)	(6.9)	
LDH ^a (U/L)	Mean	176.5	181.9	178.1	172.4	172.4	170.0	175.3	189.5	.920
	(SD)	(43.9)	(48.5)	(43.8)	(30.6)	(35.3)	(33.4)	(37.3)	(52.0)	
Total bilirubins ^a (mg/dL)	Mean	0.37	0.38	0.39	0.39	0.36	0.36	0.40	0.38	.955
	(SD)	(0.12)	(0.12)	(0.14)	(0.13)	(0.13)	(0.11)	(0.14)	(0.08)	
Serum Calcium ^a (mg/dL)	Mean	8.79	8.69	8.61	8.62	8.58	8.67	8.75	8.64	.827
	(SD)	(0.65)	(0.52)	(0.35)	(0.50)	(0.56)	(0.48)	(0.56)	(0.50)	
Serum creatinine ^a (mg/dL)	Mean	9.69	9.75	9.47	9.77	9.52	9.79	9.80	9.48	.996
	(SD)	(2.62)	(3.01)	(2.59)	(2.73)	(2.69)	(2.80)	(2.36)	(2.70)	
Serum chloride ^a (mEq/L)	Mean	102.3	101.4	102.4	102.2	101.4	102.0	102.2	102.0	.875
	(SD)	(3.4)	(2.9)	(2.7)	(3.4)	(3.1)	(3.3)	(2.9)	(3.8)	
Serum phosphate ^a (mg/dL)	Mean	5.5	5.5	5.5	5.6	5.4	6.0	5.6	5.6	.913
	(SD)	(1.4)	(1.3)	(1.4)	(1.1)	(1.5)	(1.6)	(1.4)	(1.7)	
Serum sodium ^a (mEq/L)	Mean	138.5	138.1	138.7	138.2	138.0	139.0	138.7	138.3	.942
	(SD)	(3.4)	(2.9)	(2.6)	(3.4)	(3.1)	(3.2)	(3.2)	(3.3)	
Serum potassium ^a (mEq/L)	Mean	4.5	4.5	4.4	4.5	4.4	4.5	4.3	4.4	.850
	(SD)	(0.6)	(0.7)	(0.7)	(0.6)	(0.6)	(0.6)	(0.6)	(0.7)	
Hemoglobin ^a (g/dL)	Mean	11.2	11.3	11.4	11.3	11.4	11.1	11.2	11.2	.964
	(SD)	(1.1)	(1.1)	(1.0)	(1.0)	(1.0)	(1.1)	(1.0)	(1.2)	
Glucose ^a (mg/dL)	Mean	141.1	153.2	136.4	147.1	147.9	140.2	128.1	126.5	.857
	(SD)	(60.8)	(78.2)	(55.3)	(80.9)	(82.3)	(59.5)	(34.2)	(55.0)	
LDL-cholesterol ^a (mg/dL)	Mean	83.5	83.4	84.3	82.0	81.0	81.7	85.0	84.3	1.000
	(SD)	(20.1)	(21.0)	(19.4)	(18.2)	(21.7)	(20.2)	(24.8)	(22.7)	
CRP ^a (mg/dL)	Mean	0.80	0.79	0.41	0.59	0.82	0.37	0.34	0.61	.417
	(SD)	(1.20)	(1.52)	(0.86)	(1.24)	(1.99)	(0.94)	(0.92)	(1.01)	
Total cholesterol ^a (mg/dL)	Mean	151.8	149.8	149.9	147.8	145.3	145.5	150.5	149.2	.998
	(SD)	(25.4)	(25.0)	(23.8)	(24.0)	(29.1)	(25.6)	(33.1)	(27.8)	
Total protein ^a (g/dL)	Mean	6.3	6.2	6.2	6.2	6.1	6.1	6.3	6.3	.692
	(SD)	(0.5)	(0.5)	(0.6)	(0.6)	(0.6)	(0.5)	(0.5)	(0.6)	
Serum albumin ^a (g/dL)	Mean	3.39	3.40	3.46	3.43	3.42	3.46	3.52	3.49	.711
	(SD)	(0.32)	(0.43)	(0.34)	(0.37)	(0.40)	(0.36)	(0.34)	(0.48)	
Transthyretin ^a (mg/dL)	Mean	23.9	25.8	24.6	26.9	25.6	26.5	26.6	28.1	.794
	(SD)	(5.5)	(7.8)	(6.6)	(6.9)	(8.0)	(7.2)	(7.0)	(9.8)	
Urea nitrogen ^a (mg/dL)	Mean	58.5	63.3	56.8	62.3	59.4	60.5	58.5	62.6	.651
	(SD)	(14.0)	(18.1)	(14.6)	(15.5)	(17.4)	(16.3)	(15.5)	(15.8)	
BNP ^a (pg/mL)	Mean	329.4	407.4	354.1	446.2	451.8	379.6	238.7	243.8	.917
	(SD)	(514.0)	(986.3)	(644.4)	(1130.2)	(1092.2)	(744.7)	(239.5)	(269.3)	
Dry body weight ^a (kg)	Mean	56.5	56.4	55.8	55.6	55.1	55.4	55.9	55.5	.998
	(SD)	(9.0)	(9.2)	(9.3)	(9.4)	(9.6)	(9.8)	(9.5)	(8.9)	
Systolic blood pressure ^a (mmHg)	Mean	150.4	151.8	150.6	149.8	147.9	147.3	147.6	151.9	.989
	(SD)	(22.7)	(21.6)	(31.0)	(24.4)	(22.8)	(22.2)	(19.1)	(17.6)	
Diastolic blood pressure ^a (mmHg)	Mean	82.0	79.9	79.5	81.5	78.4	78.0	80.5	82.6	.860
	(SD)	(12.6)	(12.5)	(13.9)	(12.4)	(11.3)	(14.3)	(12.1)	(12.0)	

^a Wilcoxon test

Abbreviations: ALT, Alkaline aminotransferase; AST, Asparate aminotransferase; BNP, Human brain natriuretic peptide; CRP, C-relative protein; LDH, Lactate dehydrogenase.