



Anti-obesity Effect of *Aster Spathulifolius Maxim* extract

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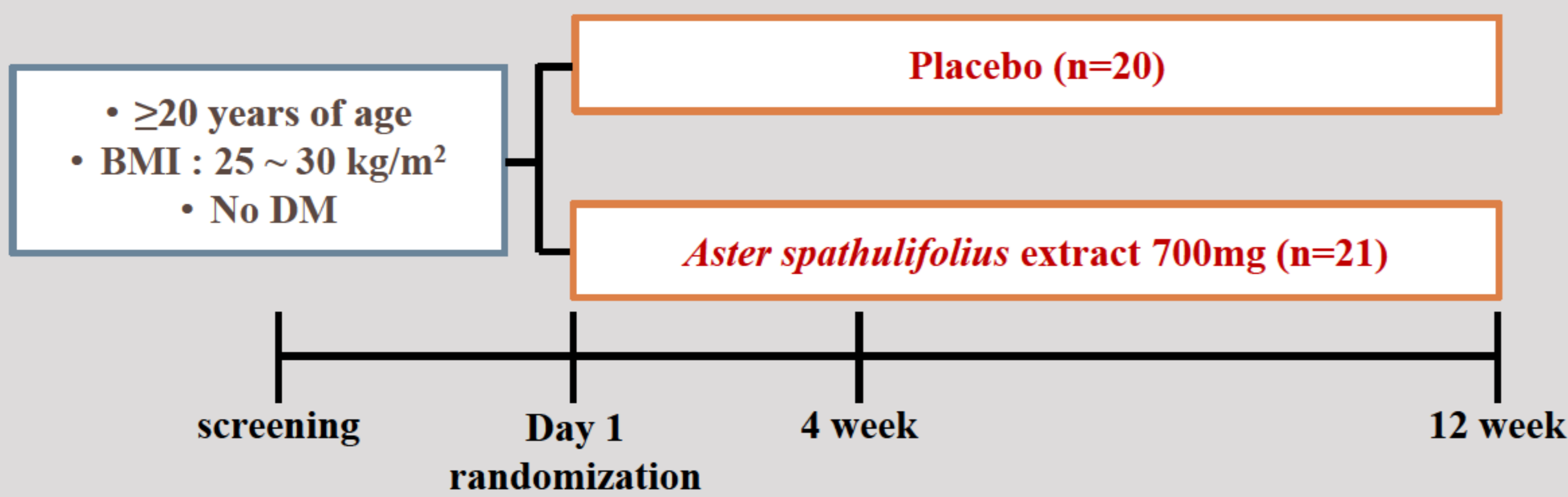
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Introduction and Objectives

Aster spathulifolius Maxim is one of plants of chrysanthemum, which has shown an anti-obesity activity in diet induced mice model. We performed clinical trial for evaluating the anti-obesity efficacy and safety of *Aster spathulifolius Maxim* extract on obese human.

Materials and Methods

This study was randomized, double-blind, placebo-controlled clinical trial in Korea. A total of 41 obese subjects [body mass index (BMI) 25-30 kg/m²] aged ≥ 20 years were randomized to one of two groups: (1) placebo group (n=20), (2) *Aster spathulifolius* extract (AE) group (AE 700mg/day, n=21). All subjects were instructed to take a pill of once-daily regimen for 12 weeks. Weight, BMI, waist circumference, fat mass [measured by bioimpedance method, DEXA, and abdominal computed tomography (CT)], and laboratory test were assessed at baseline and 12 weeks.



Results

Baseline characteristics of the subjects were not differ between the two groups (Table 1). Body weight was significantly decreased in AE group after 12-week treatment (placebo vs. AE: -0.08 ± 2.11 kg vs. -3.30 ± 3.15 kg, $p < 0.05$, Figure 1). Body fat mass reduction was significantly shown in AE group after 12-week treatment (placebo vs. AE; bioimpedance method: -0.51 ± 1.89 kg vs. -2.38 ± 2.30 kg, $p < 0.05$; DEXA: 0.38 ± 1.59 kg vs. -2.26 ± 2.37 kg, $p < 0.05$; visceral fat area in CT: 8.11 ± 18.13 vs. -24.9 ± 37.0 cm², $p < 0.05$; subcutaneous fat area in CT: 5.51 ± 34.58 vs. -24.4 ± 31.8 cm², $p < 0.05$, Figure 2 and 3). The changes of lipid profile, fasting plasma glucose, and HbA1C did not differ between two groups (Table 2). In safety, there were no drug-related adverse events during the study.

Table 1 - Baseline characteristics of the study subjects

	Placebo N=20	AE N=21	P-value	
Age (years)	38.0 ± 9.2	41.9 ± 10.7	NS	
Male, n [%]	10 [50.0 %]	9 [42.9 %]	NS	
Height (cm)	168.5 ± 11.4	167.6 ± 7.3	NS	
Weight (kg)	77.1 ± 11.3	76.4 ± 8.6	NS	
BMI (kg/m ²)	27.1 ± 1.3	27.1 ± 1.4	NS	
Waist circumference (cm)	96.1 ± 5.9	96.8 ± 5.8	NS	
Bioimpedance method	Body fat mass (kg)	25.1 ± 5.0	24.7 ± 4.1	NS
	Percent body fat (%)	32.9 ± 6.4	32.6 ± 5.8	NS
	Waist-Hip ratio	0.90 ± 0.04	0.91 ± 0.04	NS
DEXA	Trunk fat (g)	14357.1 ± 3220.9	14871.2 ± 2349.6	NS
	Leg fat (g)	7963.3 ± 2142.8	8134.1 ± 1715.3	NS
	Total fat (g)	26758.3 ± 5647.9	27481.6 ± 4057.3	NS
Abdominal CT	Total fat (cm ²)	351.3 ± 74.2	370.6 ± 79.7	NS
	Visceral fat (cm ²)	114.7 ± 47.7	138.0 ± 62.7	NS
	Subcutaneous fat (cm ²)	236.6 ± 74.6	232.6 ± 82.6	NS
	V/S ratio (%)	33.3 ± 12.0	37.4 ± 14.7	NS
Total cholesterol (mg/dl)	197.0 ± 34.0	204.1 ± 38.0	NS	
Triglyceride (mg/dl)	159.2 ± 121.9	242.4 ± 284.4	NS	
LDL-C (mg/dl)	120.9 ± 25.4	118.8 ± 32.1	NS	
HDL-C (mg/dl)	50.4 ± 11.6	50.4 ± 12.3	NS	
Apo-B (mg/dL)	92.5 ± 27.5	98.3 ± 22.2	NS	
FPG (mg/dl)	102.8 ± 11.2	101.0 ± 10.3	NS	
Insulin (uIU/mL)	10.4 ± 3.6	11.2 ± 4.5	NS	
HbA1c (%)	5.28 ± 0.31	5.24 ± 0.33	NS	

All data are expressed as mean ± SD
P-value by t-test
NS, not significant

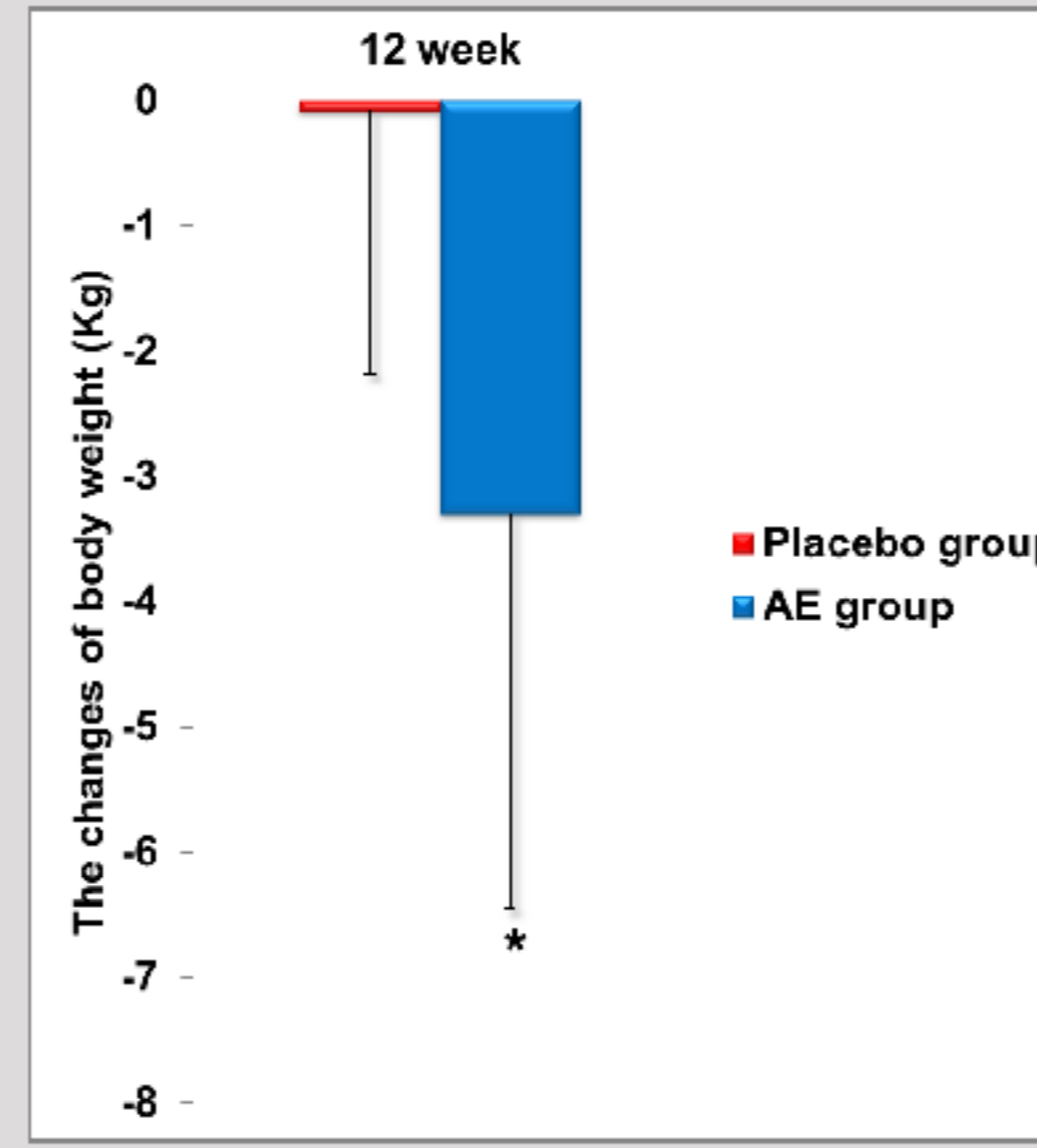


Figure 1. The changes of body weight after 12-week treatment (* $p < 0.05$ compared with placebo group).

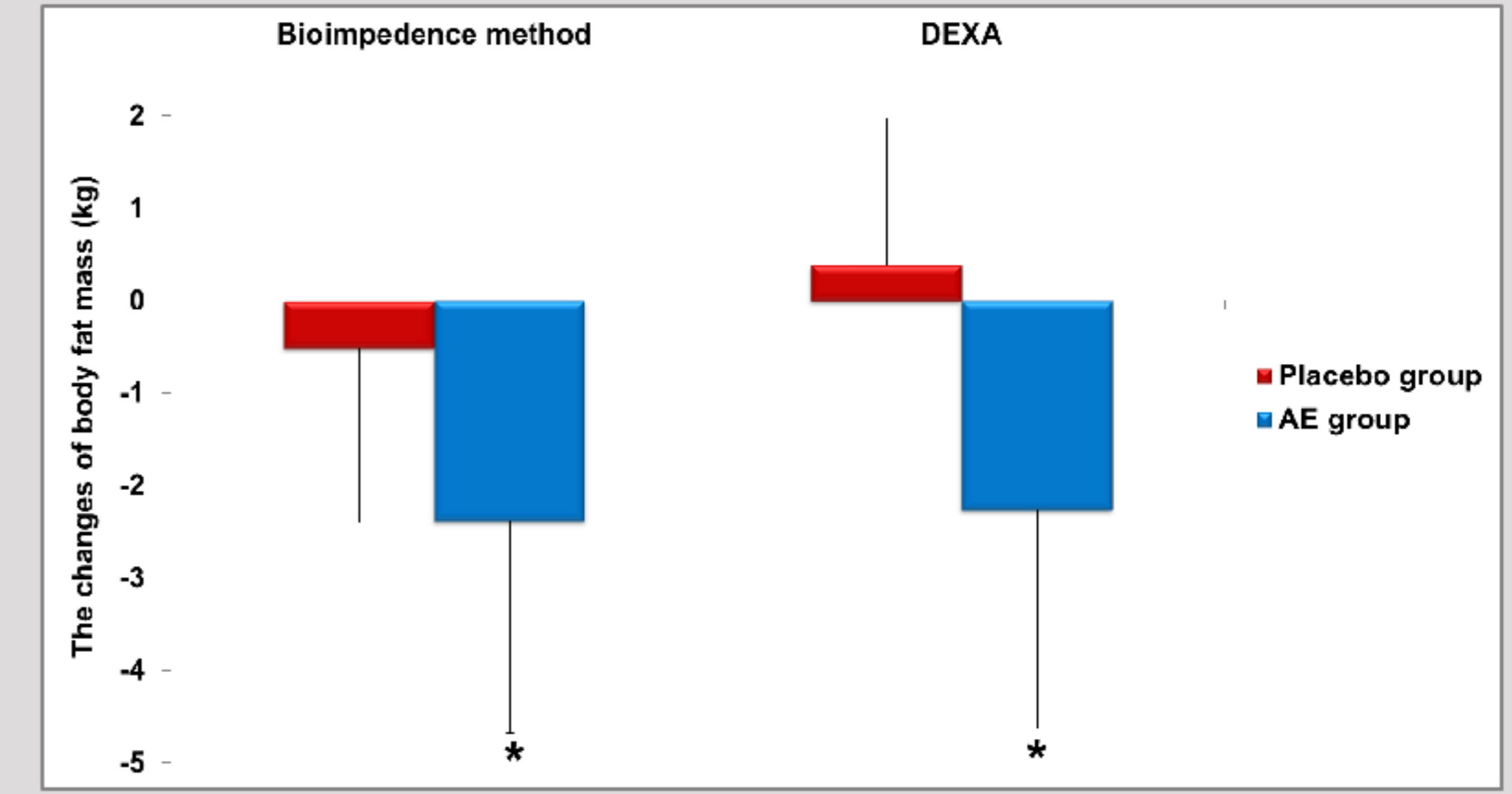


Figure 2. The changes of body fat mass after 12-week treatment (* $p < 0.05$ compared with placebo group).

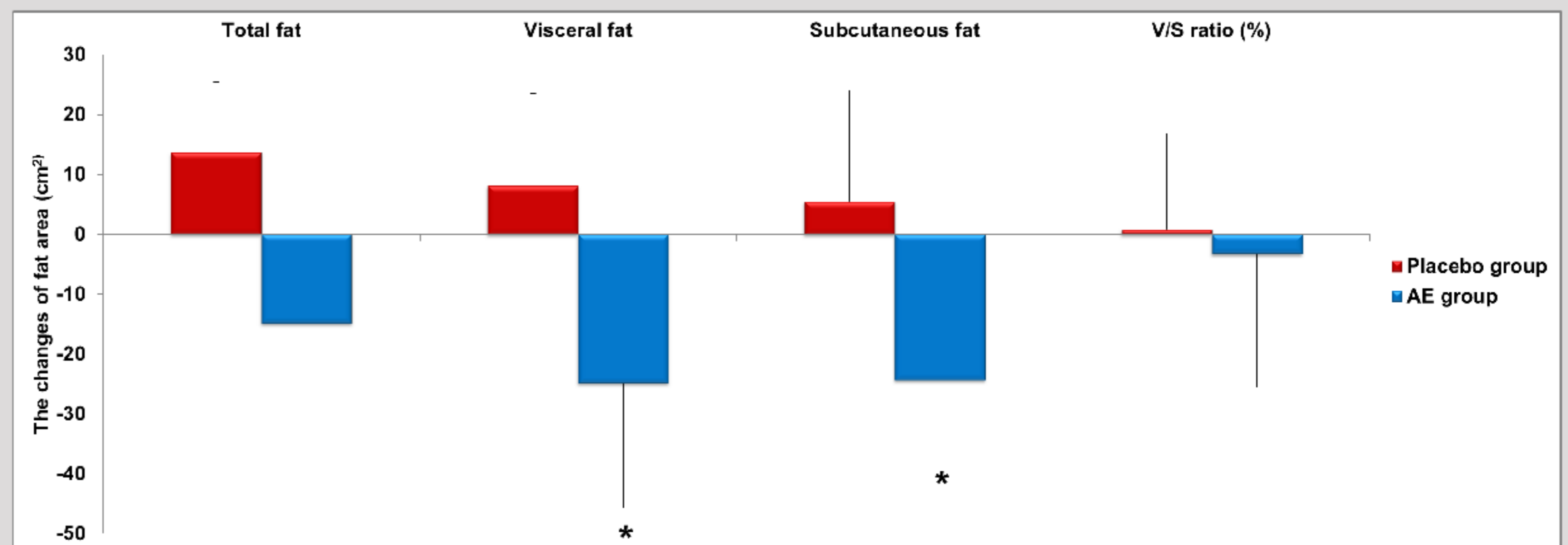


Figure 3. The changes of fat area in abdominal CT after 12-week treatment (* $p < 0.05$ compared with placebo group).

Table 2 - The changes in body weight, fat mass and laboratory test after 12-week treatment

	Placebo N=20	AE N=21	P-value	
Weight (kg)	-0.08 ± 2.11	-3.30 ± 3.15	0.0004	
BMI (kg/m ²)	-0.06 ± 0.65	-1.16 ± 1.08	0.0003	
Waist circumference (cm)	0.36 ± 2.17	-6.60 ± 16.01	0.0618	
Bioimpedance method	Body fat mass (kg)	-0.51 ± 1.89	-2.38 ± 2.30	0.0075
	Percent body fat (%)	-0.68 ± 1.65	-1.87 ± 2.12	0.0543
	Waist-Hip ratio	0.00 ± 0.01	-0.02 ± 0.02	0.0016
DEXA	Trunk fat (g)	45.6 ± 1026.0	-1473.3 ± 1634.4	0.0001
	Leg fat (g)	160.0 ± 482.5	-482.2 ± 543.2	0.0003
	Total fat (g)	380.0 ± 1589.5	-2264.1 ± 2367.1	0.0002
Abdominal CT	Total fat (cm ²)	13.6 ± 35.1	-14.9 ± 151.7	0.4180
	Visceral fat (cm ²)	8.11 ± 18.13	-24.9 ± 37.0	0.0009
	Subcutaneous fat (cm ²)	5.51 ± 34.58	-24.4 ± 31.8	0.0063
	V/S ratio (%)	0.8 ± 4.88	-3.29 ± 9.33	0.0892
Total cholesterol (mg/dl)	-1.25 ± 25.03	-6.33 ± 29.77	0.5584	
Triglyceride (mg/dl)	5.00 ± 58.18	-59.14 ± 409.49	0.4921	
LDL-C (mg/dl)	14.9 ± 33.8	13.9 ± 26.7	0.9212	
HDL-C (mg/dl)	0.90 ± 6.67	2.24 ± 10.57	0.6326	
Apo-B (mg/dL)	0.90 ± 6.67	2.24 ± 10.57	0.6326	
FPG (mg/dl)	-2.65 ± 9.59	-1.14 ± 11.04	0.6441	
Insulin (uIU/mL)	0.55 ± 5.37	-1.20 ± 5.32	0.2996	
HbA1c (%)	0.02 ± 0.14	0.02 ± 0.21	0.9834	

Changes = (result in 12-week treatment) - (result in baseline)
All data are expressed as mean ± SD
P-value by t-test

Conclusions

In conclusion, *Aster spathulifolius Maxim* extract significantly decreases body weight and body fat mass in obese human.

References

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