



**Figure S1.** The fingerprint chromatogram of the cashew leaves -extract plus cashew apple pomace-derived fiber (AO). Using Purospher®STAR, C-18 encapped (5µm), LiChroCART®250-4.6 and HPLC-Cartridge, Sorbet Lot No. HX255346 (Merk, Germany) with guard column (Merk, Germany).

**Table S1.** Effect of the functional ingredients consisting of cashew leaf extract and a.cashew apple pomace-derived dietary fiber (AO) on the growth of *Lactobacillus* spp.

Treatment Group	<i>Lactobacillus</i> spp. (%Change)
HFHC+Vehicle	1.044±0.05
HFHC+ leaves extract	5.353±0.31
HFHC+Fiber	156.087±4.35 ***
HFHC+AO2	195.032±3.18 ***
F-test,p-value	F(5,19) = 369.05, p-value< 0.0001

Data are presented as mean ± SEM (n=6/group). \*\*\* p-value<0.001; compared to vehicle.

**Table S2.** Effect of the functional ingredients consisting of cashew leaf extract and a.cashew apple pomace-derived dietary fiber (AO) on the growth of *Bifidobacterium* spp.

Treatment Group	<i>Bifidobacterium</i> spp. (%Change)
HFHC+Vehicle	0.411±0.02
HFHC+ leaves extract	9.594±0.27
HFHC+Fiber	38.913±1.82 ***
HFHC+AO2	52.466±1.50 ***
F-test,p-value	F(5,19) = 253.16, p-value< 0.001

Data are presented as mean ± SEM (n=6/group). \*\*\* p-value<0.001; compared to vehicle.

**Table S3.** Effect of the functional ingredient containing cashew leaves extract and cashew apple pomace-derived dietary fiber (AO) on body weights. Data are presented as mean  $\pm$  SEM )n=6/group.

Treatment Group	Body Weights (g)		
	1-Day	7-Day	14-Day
Naïve control	488.25 $\pm$ 1.23	496.75 $\pm$ 1.12	494.25 $\pm$ 1.23
HFHC+Vehicle	537.25 $\pm$ 2.43 <sup>aaa</sup>	597.25 $\pm$ 2.24 <sup>aaa</sup>	598.75 $\pm$ 2.20 <sup>aaa</sup>
HFHC+Vitamin C (250 mg/kgBW)	537.5 $\pm$ 2.46	525.45 $\pm$ 2.34 <sup>***</sup>	517.50 $\pm$ 2.32 <sup>***</sup>
HFHC+Diazepam (2 mg/kgBW)	536.75 $\pm$ 2.34	606.52 $\pm$ 2.42	599.54 $\pm$ 3.35
HFHC+Fluoxetine 20 mg/kg BW	537.89 $\pm$ 3.25	585.75 $\pm$ 3.21	579.87 $\pm$ 2.30
HFHC+Donepezil (1 mg/kg BW)	536.58 $\pm$ 2.77	598.12 $\pm$ 3.25	589.21 $\pm$ 3.12
HFHC+AO1 (1mg/kgBW)	536.50 $\pm$ 2.56	530.64 $\pm$ 2.42 <sup>***</sup>	544.21 $\pm$ 3.20 <sup>***</sup>
HFHC+AO2 (10 mg/kgBW)	536.75 $\pm$ 2.67	542.25 $\pm$ 2.45 <sup>***</sup>	554.75 $\pm$ 2.41 <sup>***</sup>
HFHC+AO3 (100 mg/kgBW)	537.5 $\pm$ 2.40	564.75 $\pm$ 2.65 <sup>***</sup>	577.25 $\pm$ 2.34 <sup>**</sup>
F-test,p-value	F(7,47) = 2.41, p-value< 0.001	F(7,47) = 103.29, p-value< 0.001	F(7,47) = 68.43, p-value< 0.001

Data are presented as mean  $\pm$  SEM (n=6/group). <sup>aaa</sup> p-value< 0.001, compared to naïve control which received ND and <sup>\*\*</sup>, <sup>\*\*\*</sup> p-value< 0.01, and 0.001, respectively; compared to metabolic syndrome rats which received HFHC and vehicle.