

Figure 1.

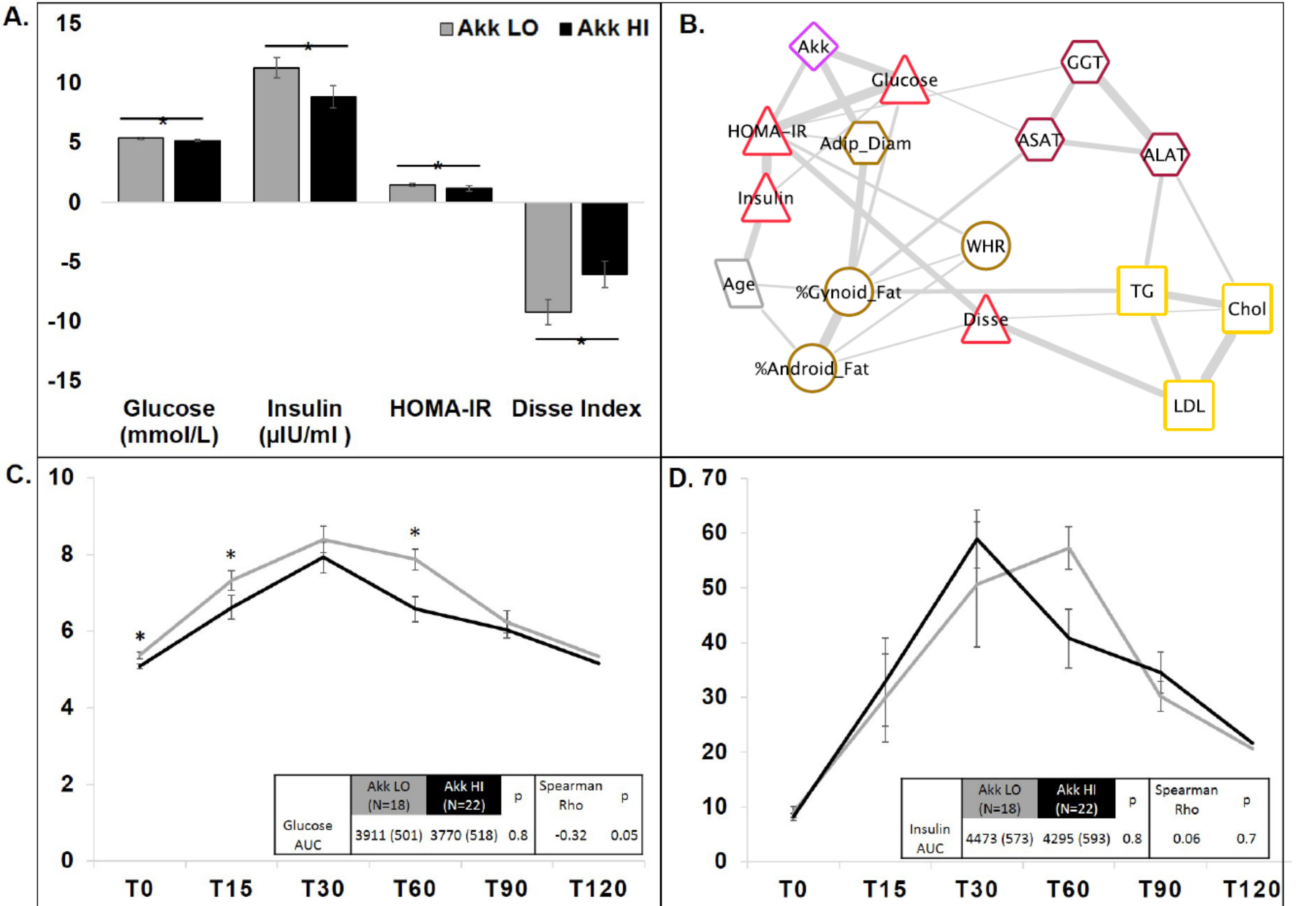


Figure 2.

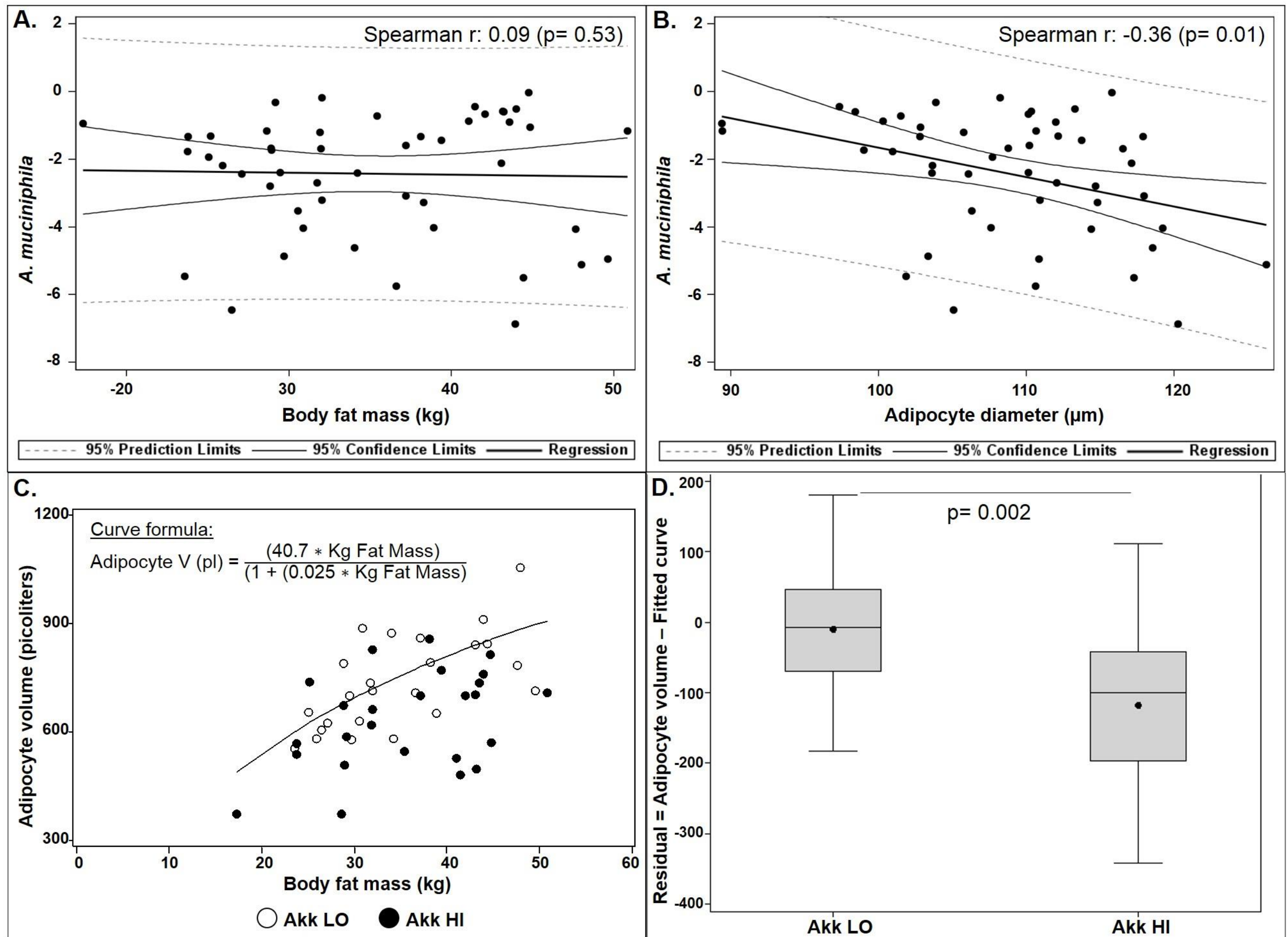


Figure 3.

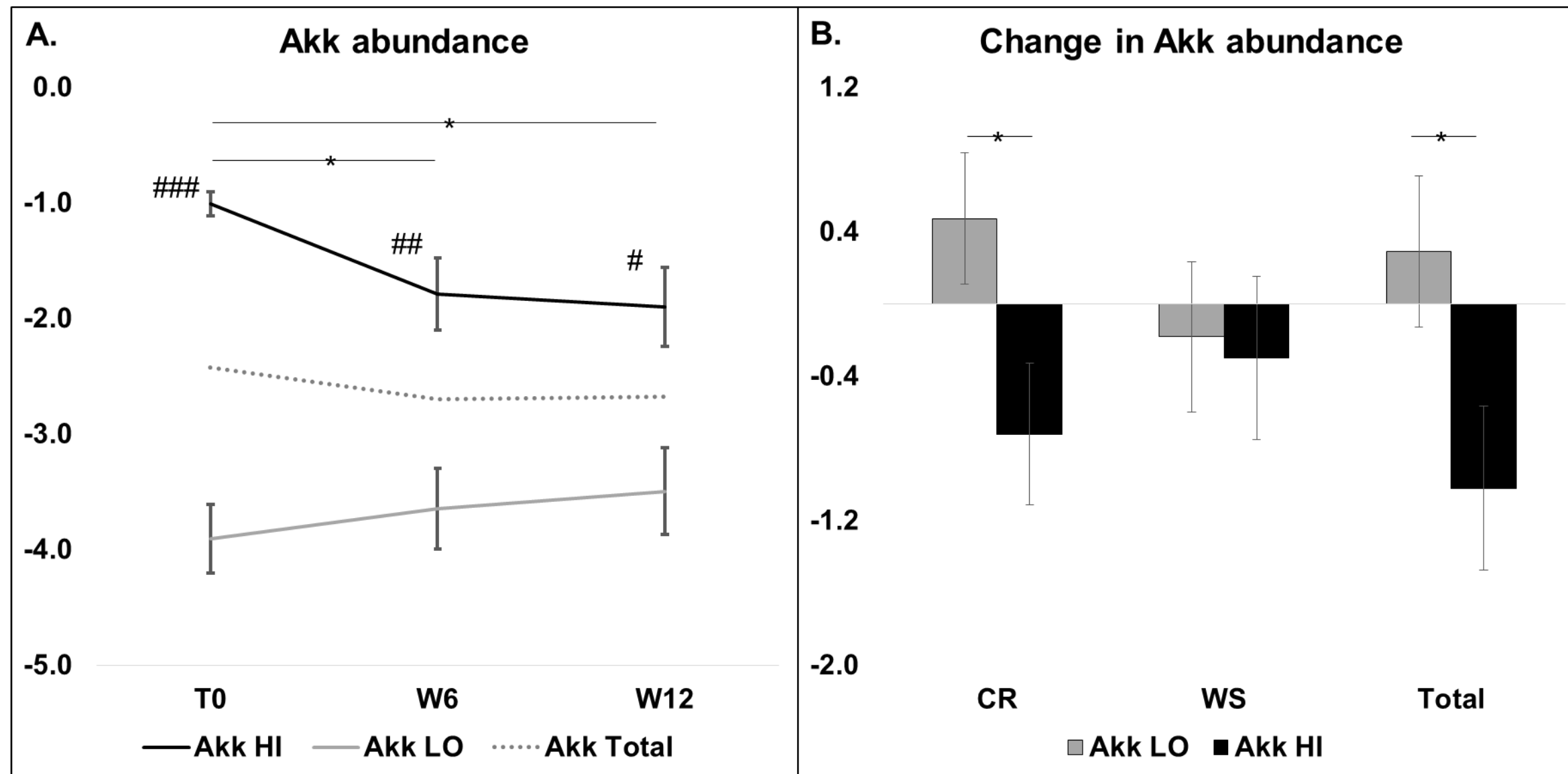


Figure 4.

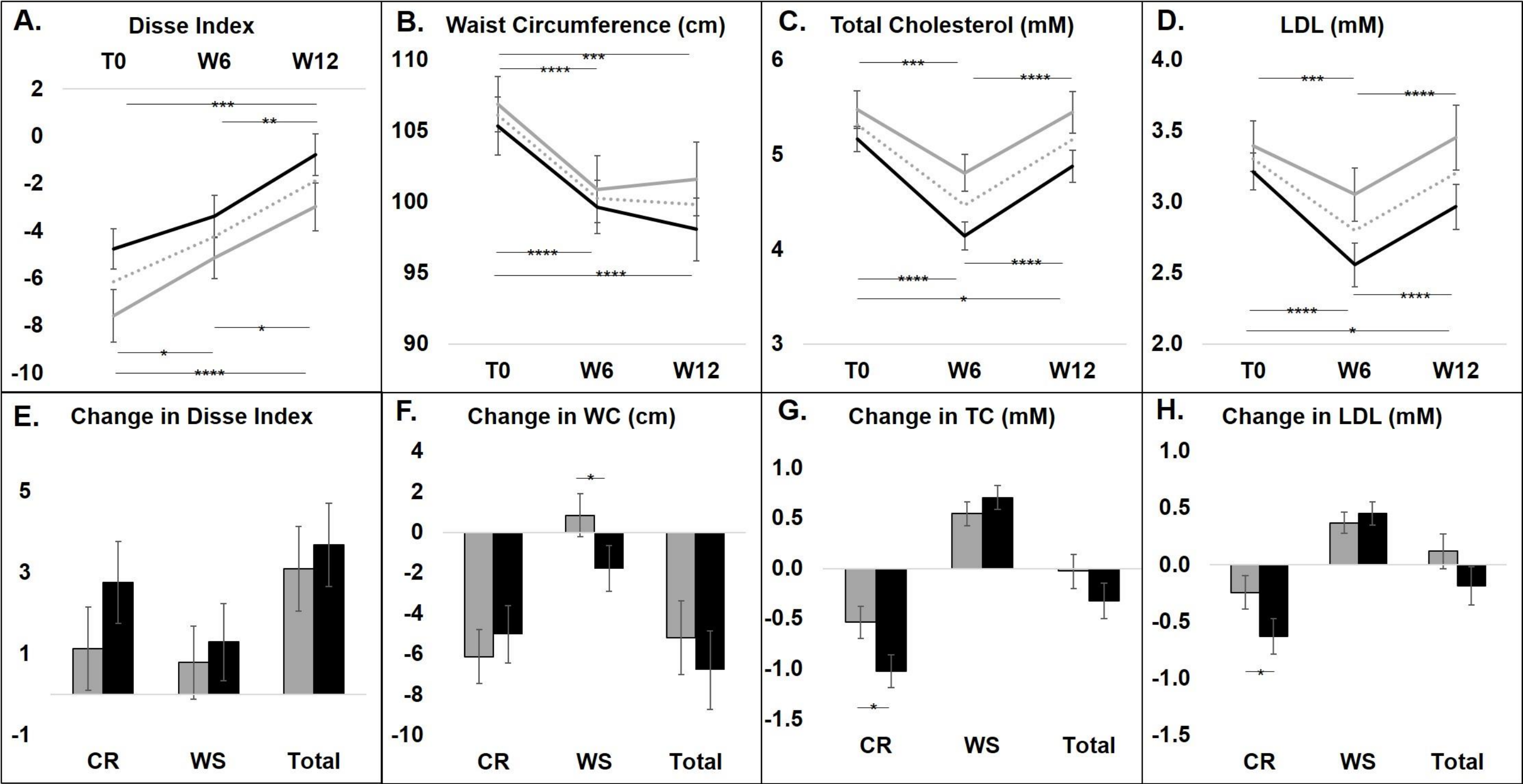


Figure 5.

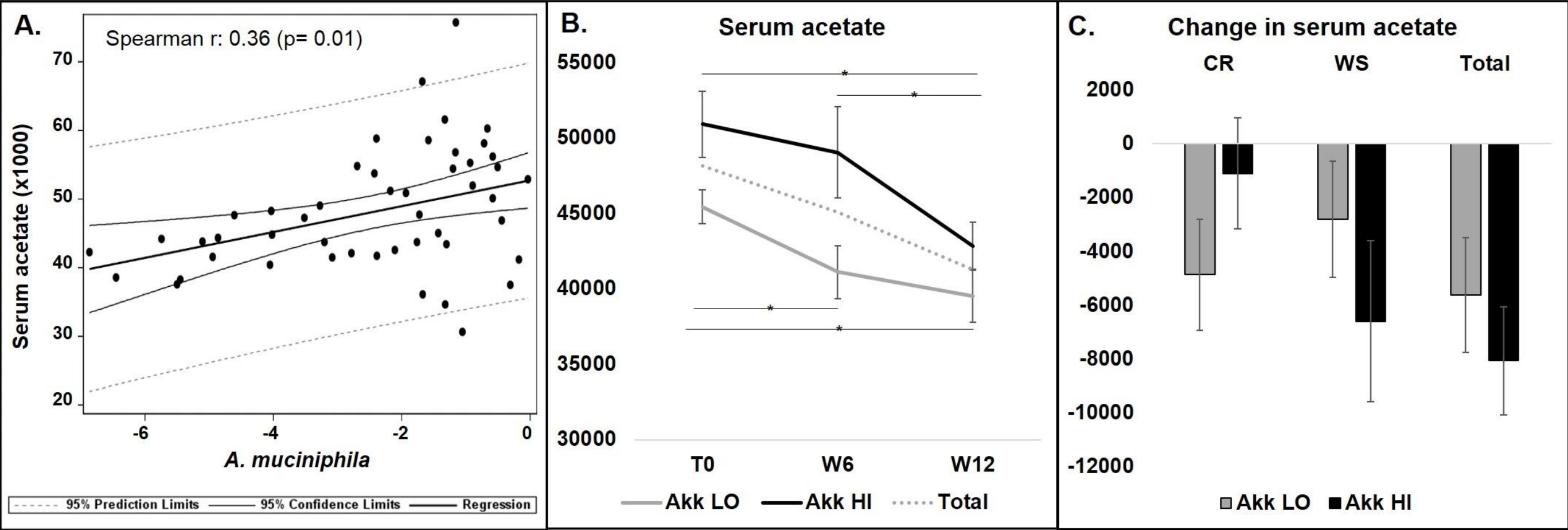


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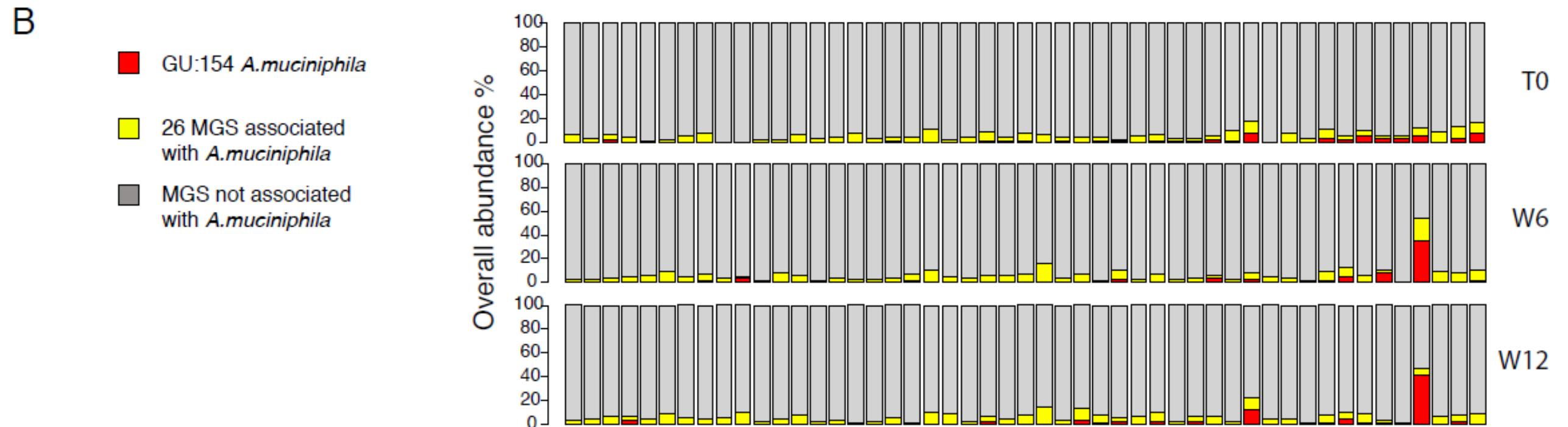
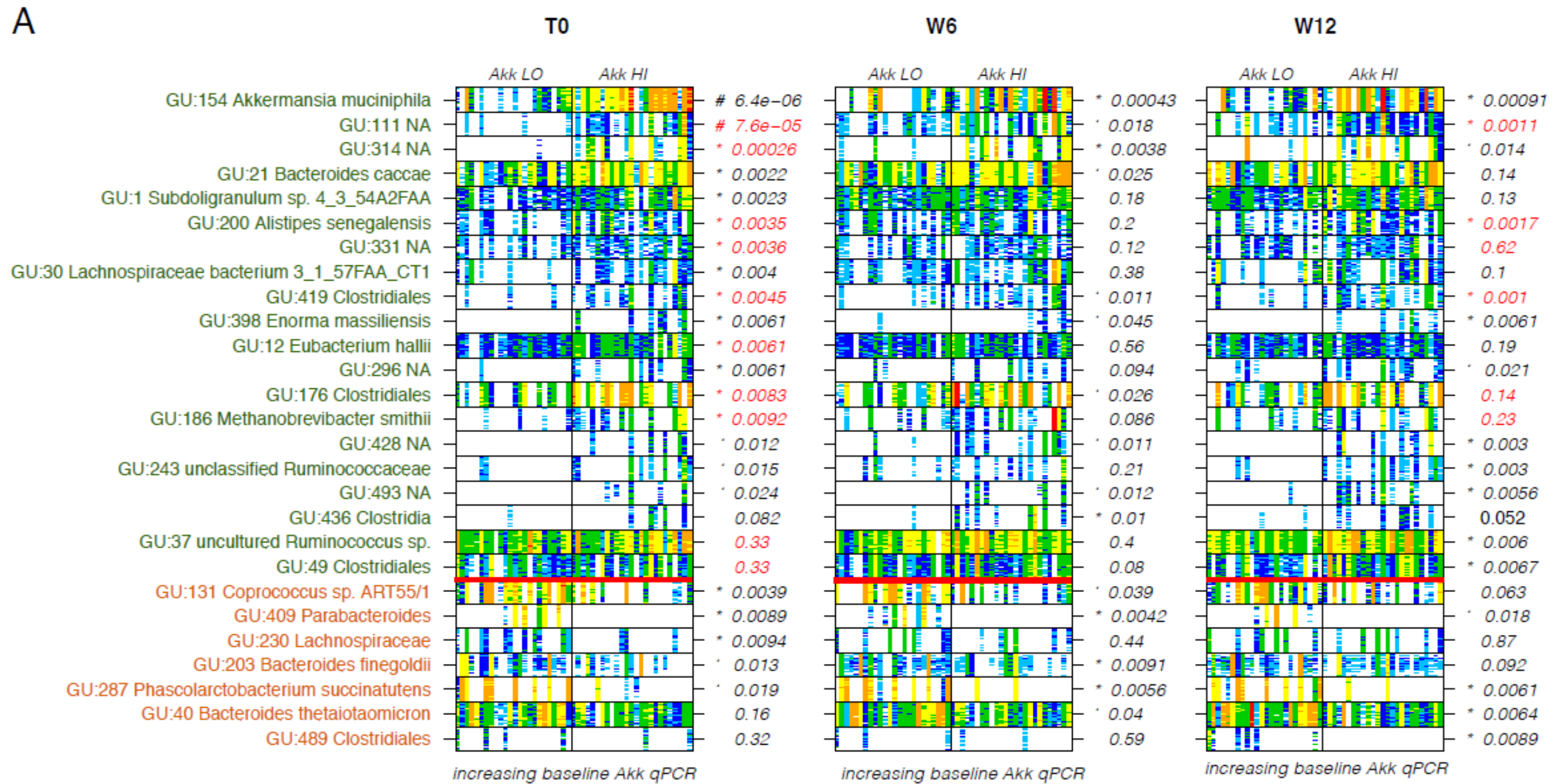


Figure 7.

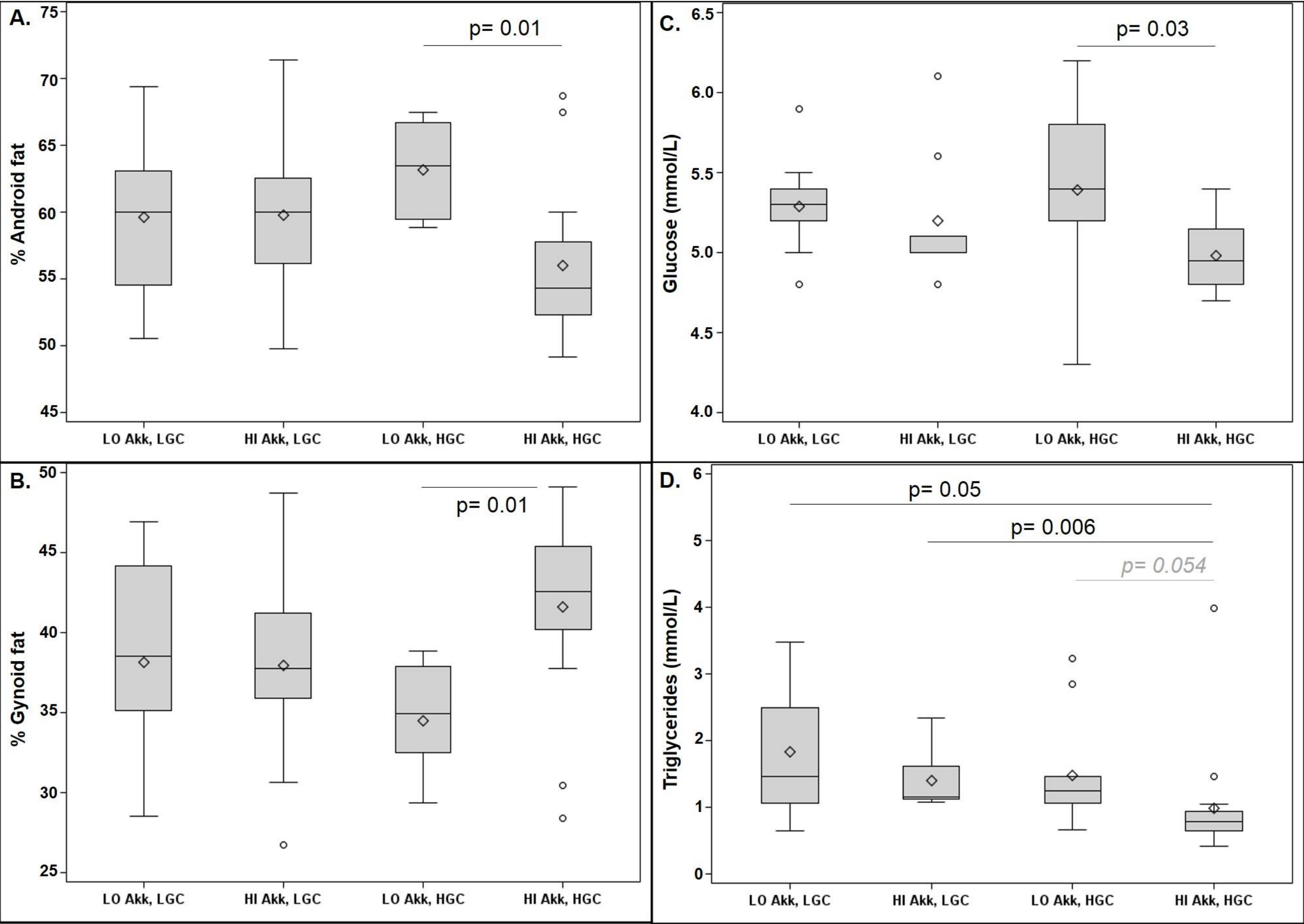
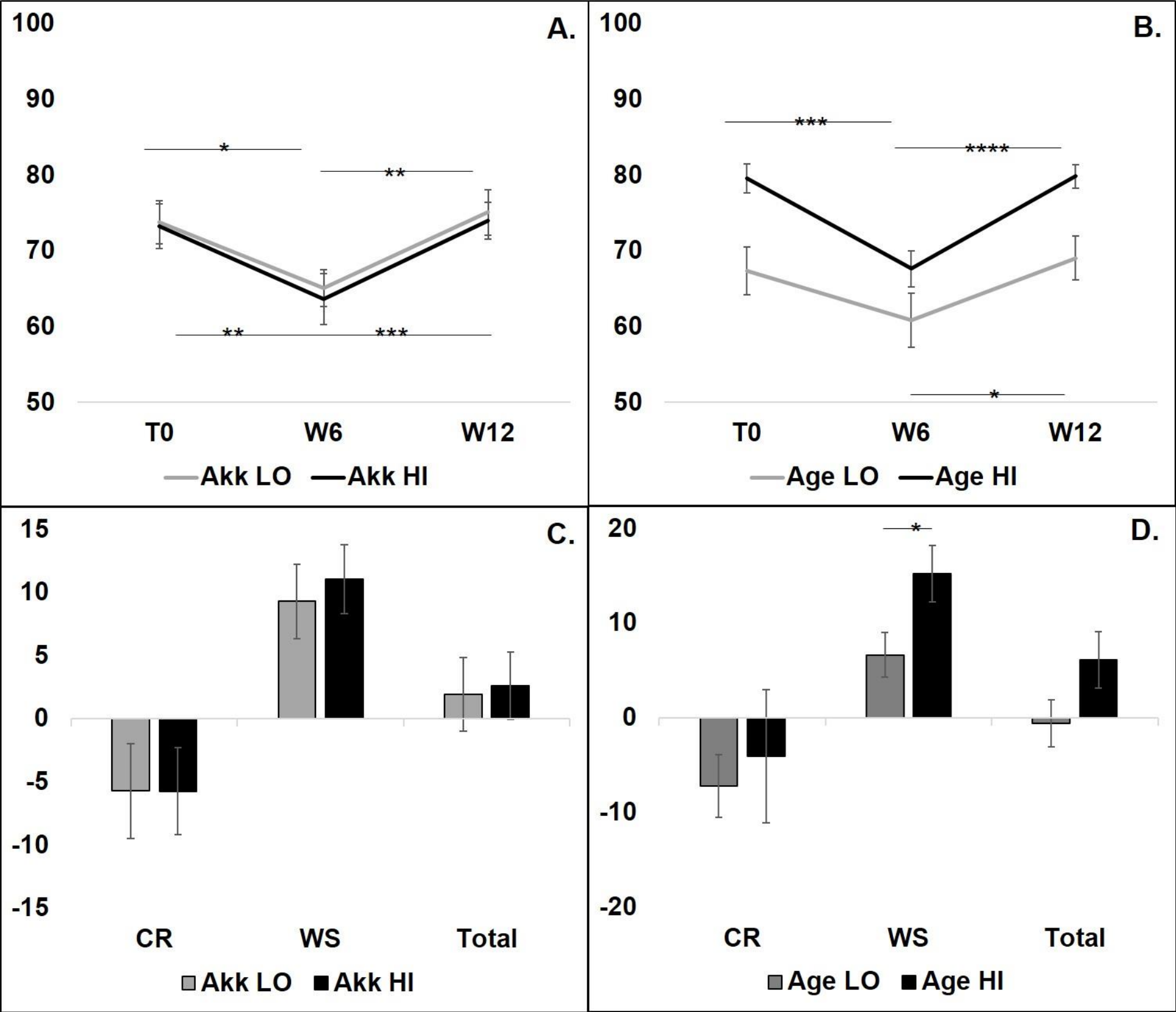
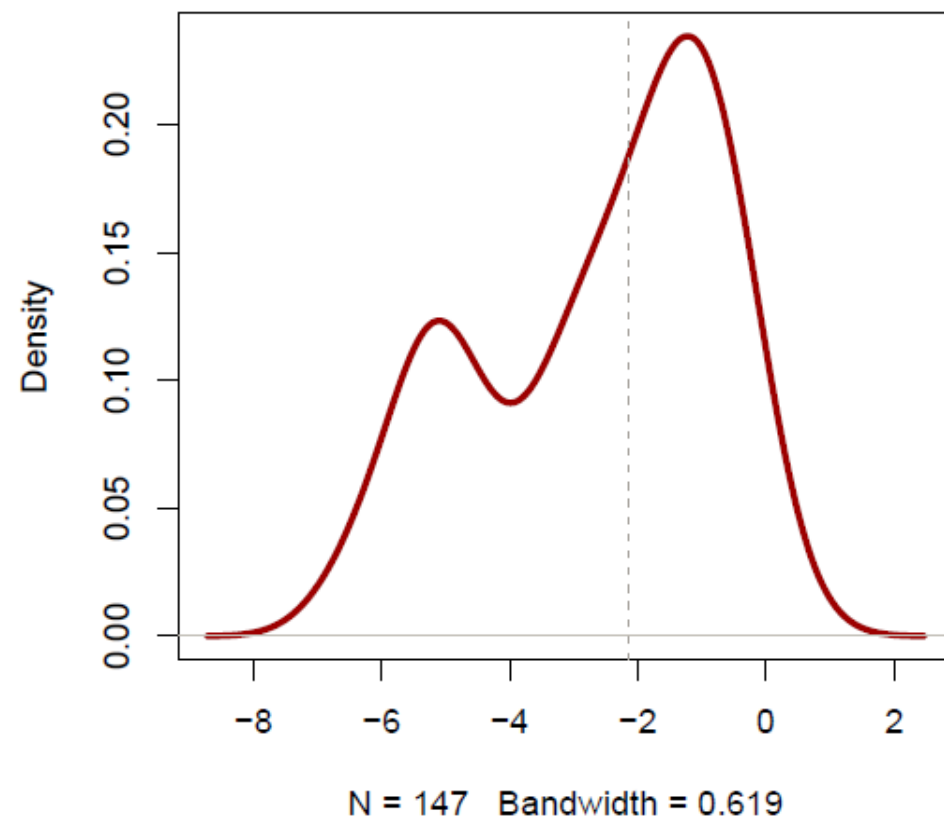


Figure 8.

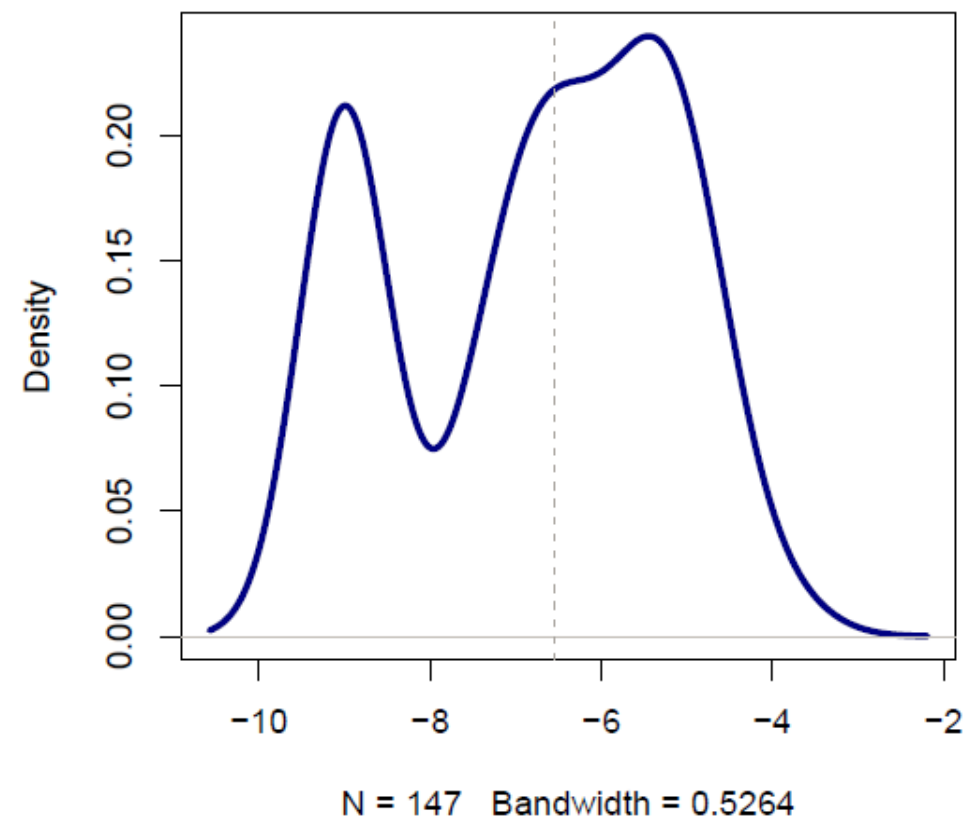


Supplementary figure 1.

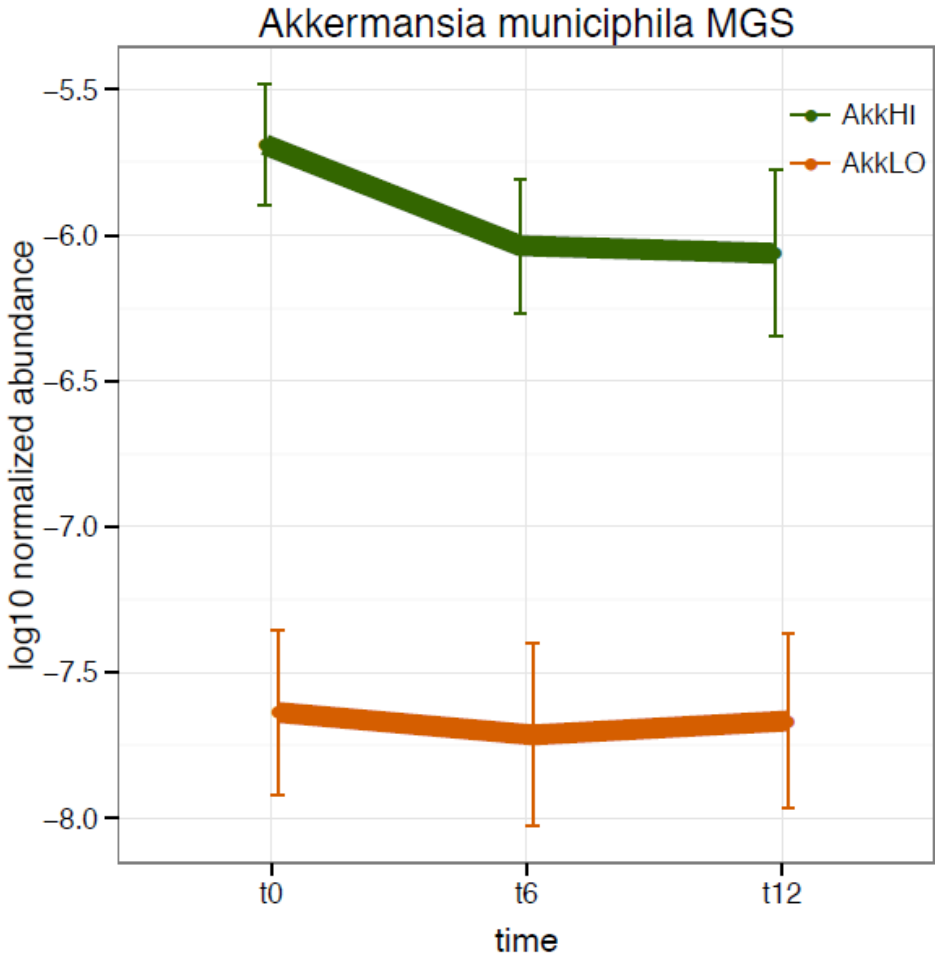
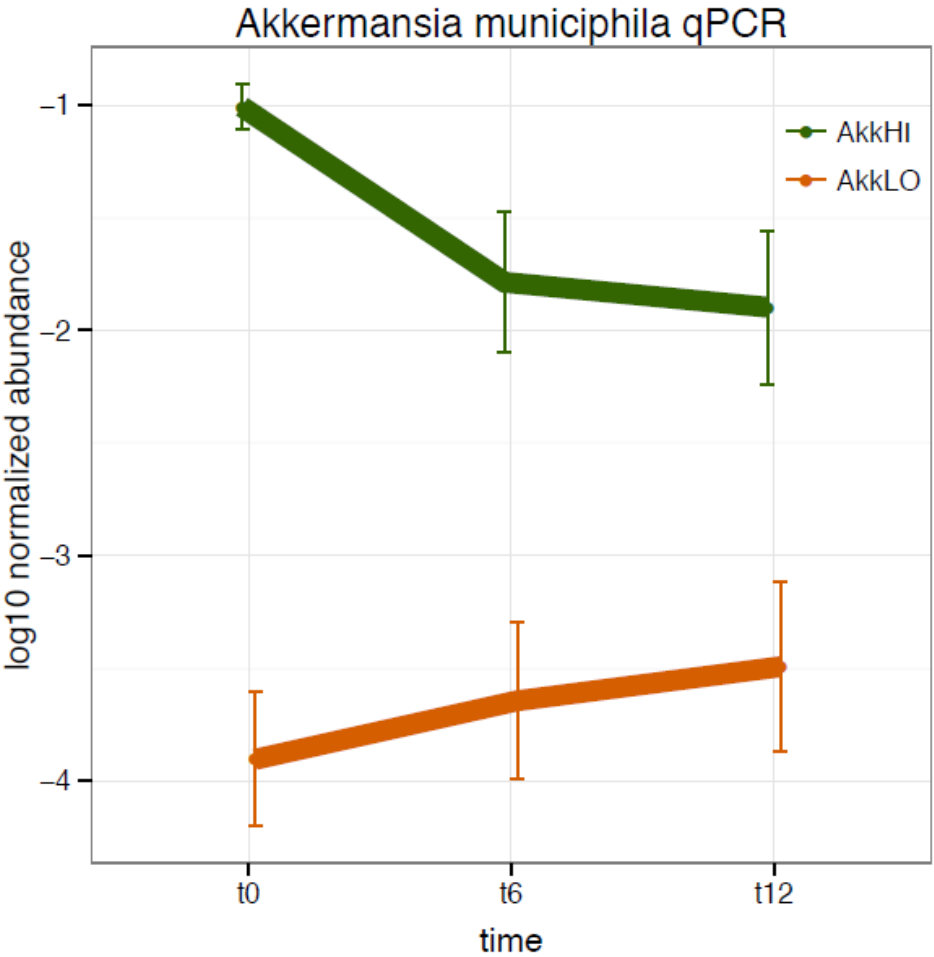
Akkermansia qPCR distribution



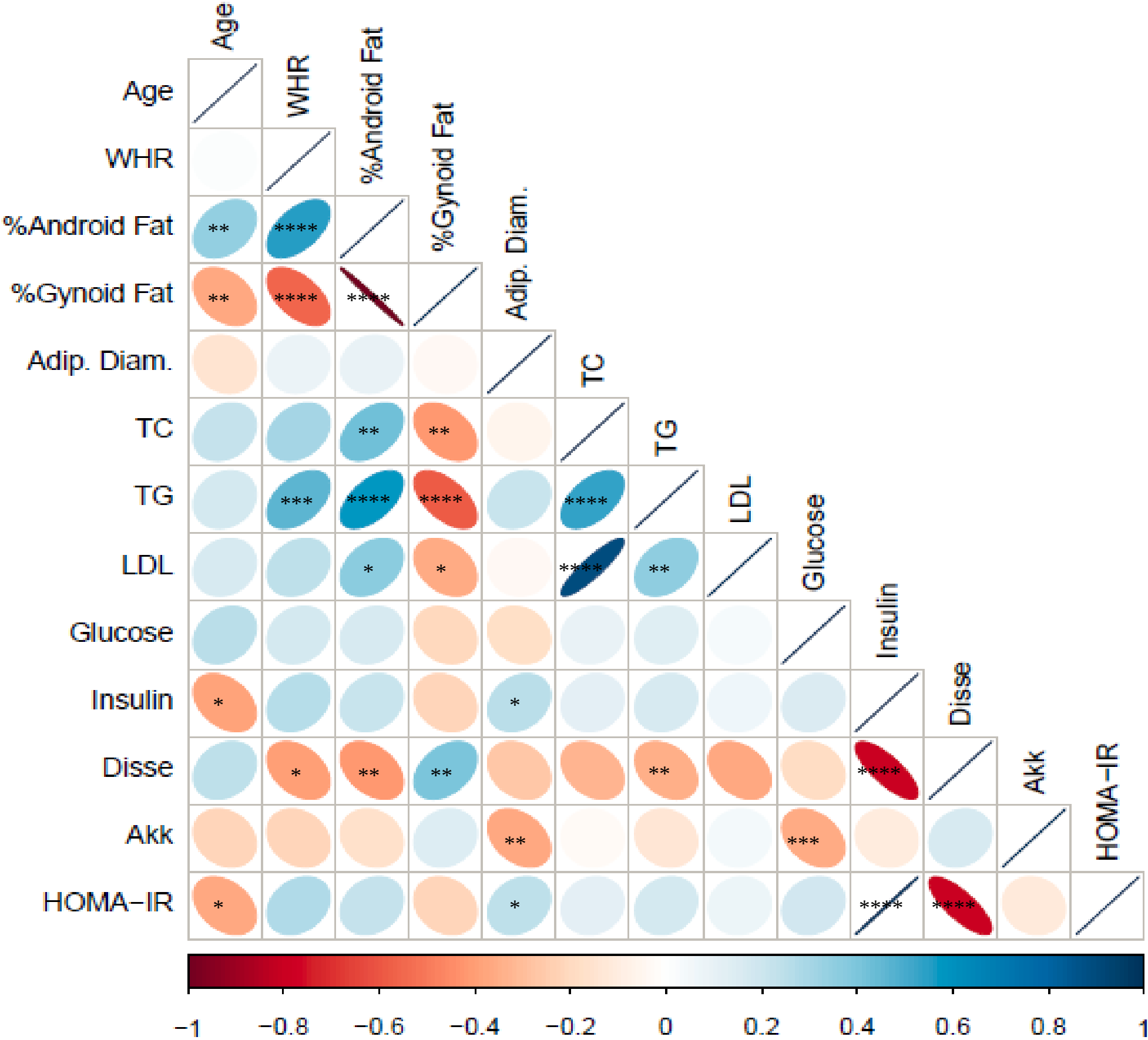
Akkermansia MGS distribution



Supplementary figure 2.

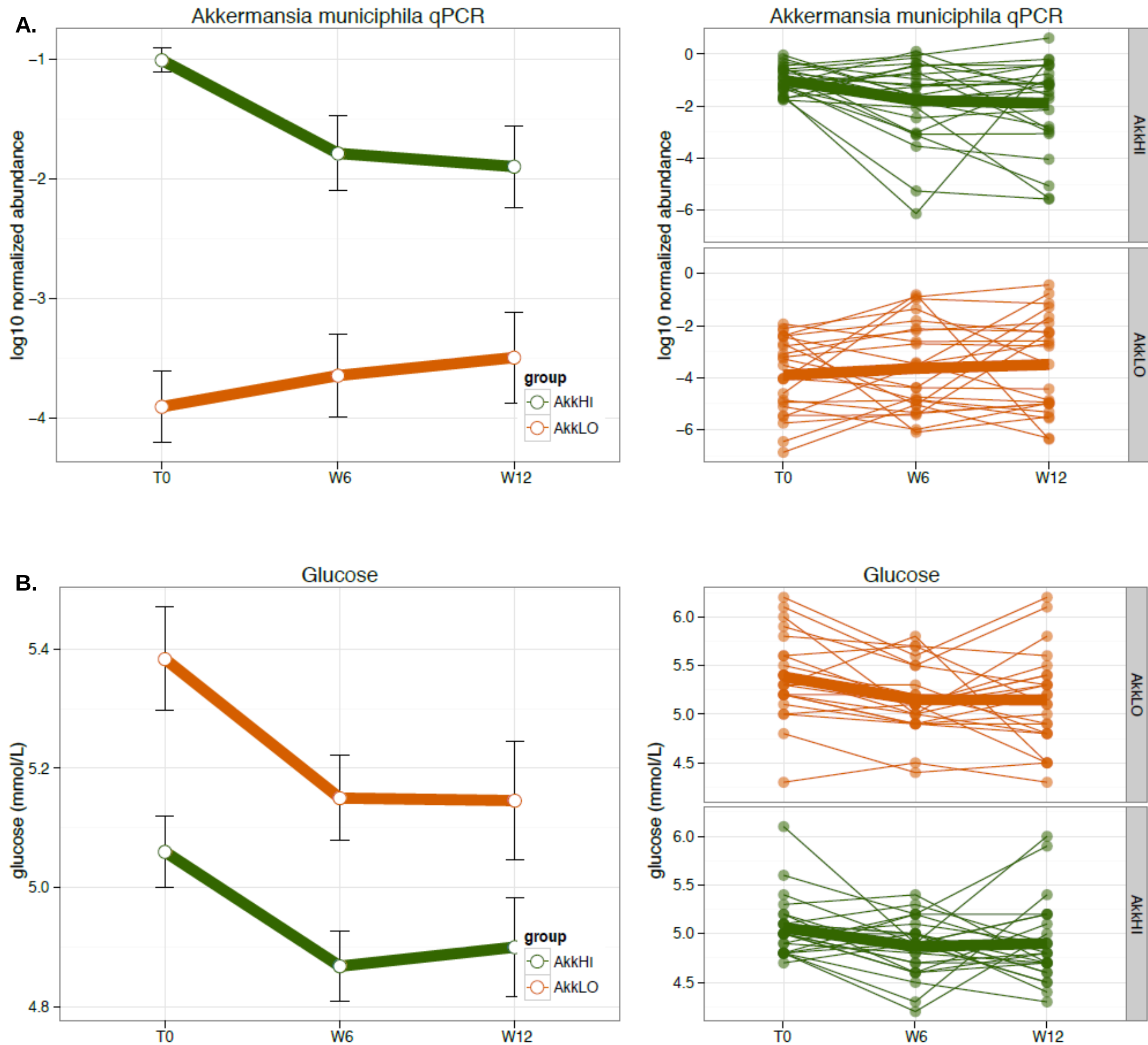


Supplementary figure 3.

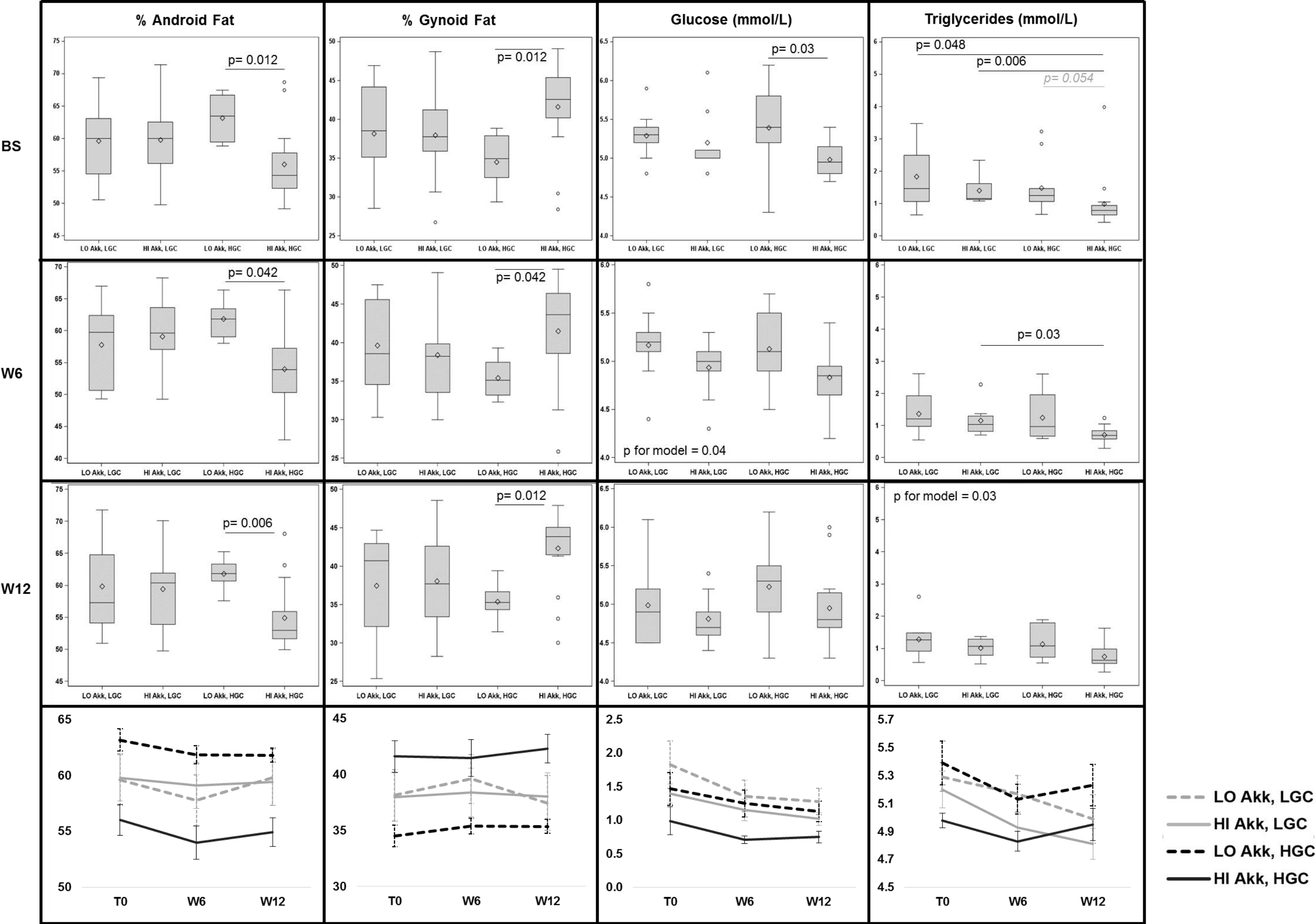


* $p \leq 0.05$; ** $p \leq 0.01$; *** $p \leq 0.001$; **** $p \leq 0.0001$

Supplementary figure 4.



Supplementary figure 5.



Supplementary Table 1. Effect size of *A. muciniphila* abundance and gene richness on clinical parameters.

Outcome	Effect size (%)		
	Akk (LO/HI)	Gene richness (LGC/HGC)	Interaction
% Android fat	4.1%	0%	15.7%
% Gynoid fat	3.5%	0%	14.8%
Glucose	15%	0%	12.5%
Triglycerides	2.8%	4.2%	7.5%

Effect size is the adjusted R^2 from linear regression models.

Supplementary table 1.

Time Point	NAR	Akk LO (N=15)		Akk HI (N=21)		p-value
		Mean	Std Dev	Mean	Std Dev	
Baseline	Protein	100	0	97	10	24
	Fiber	64	23	52	17	8
	Vitamin A	55	32	52	25	82
	Thiamine	81	18	85	16	45
	Riboflavin	80	20	80	20	81
	Niacin	99	4	91	16	21
	Vitamin B6	87	16	79	21	26
	Folic acid	78	23	75	21	58
	Vitamin B12	95	9	93	18	45
	Vitamin C	71	27	75	28	58
	Vitamin D	27	14	43	27	11
	Vitamin E	66	26	66	22	99
	Iron	67	20	65	21	95
	Magnesium	61	17	61	13	85
	Potassium	79	17	81	18	80
	Calcium	70	28	76	24	50
Week 6	Protein	100	0	100	0	100
	Fiber	82	15	73	24	37
	Vitamin A	16	24	7	5	24
	Thiamine	61	16	58	21	75
	Riboflavin	63	17	67	24	70
	Niacin	85	18	81	20	79
	Vitamin B6	73	18	72	19	91
	Folic acid	72	17	76	25	45
	Vitamin B12	81	19	72	27	28
	Vitamin C	86	19	85	25	40
	Vitamin D	20	23	23	29	55
	Vitamin E	58	26	59	25	85
	Iron	49	15	48	25	36
	Magnesium	49	8	49	20	40
	Potassium	81	16	79	19	97
	Calcium	65	18	69	28	40
Week 12	Protein	100	1	99	3	79
	Fiber	73	17	62	26	17
	Vitamin A	43	27	35	16	61
	Thiamine	82	20	90	13	38
	Riboflavin	84	16	86	17	32
	Niacin	95	10	97	9	52
	Vitamin B6	85	21	88	15	84
	Folic acid	87	21	81	21	51
	Vitamin B12	86	24	93	13	61
	Vitamin C	86	23	81	20	39
	Vitamin D	34	30	27	16	100
	Vitamin E	59	27	57	13	50
	Iron	64	17	62	19	54
	Magnesium	61	9	62	17	97
	Potassium	89	14	82	17	31
	Calcium	75	22	82	22	32