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Long-term effects of oral tea polyphenols and *Lactobacillus brevis* M8 on biochemical parameters, digestive enzymes, and cytokines expression in broilers

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Key words: Tea polyphenols, *Lactobacillus brevis*, Cytokines, Broilers

Research Summary

This study investigated the long-term effects of oral tea polyphenols (TP) and Lactobacillus brevis M8 (LB) in broilers:

- **biochemical parameters**
- **digestive enzymes**
- **cytokines expression**
- **Nf-kB signal**

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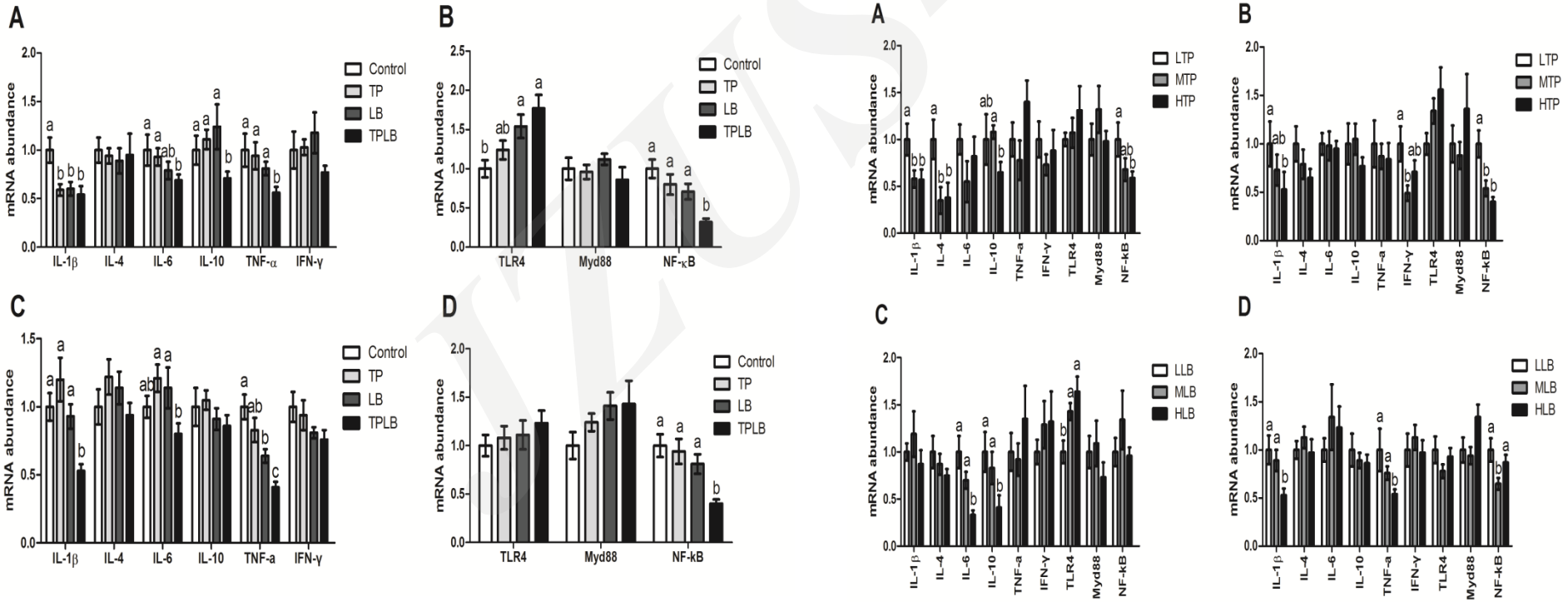
Innovation points

- **Investigation of co-administration of tea polyphenols and Lactobacillus brevis M8 in broilers.**



Innovation points

Table 1 | Effects of TP and LB on serum biochemical parameters in broilers.

Groups	LDL-C	GLU	TG	CHO	HDL-C
Experiment1					
Control	1.36±0.11^{a}	10.89±0.61	0.44±0.04^{a}	3.43±0.45	2.13±0.09^{a}
TP	0.92±0.02^{bc}	8.62±0.24	0.34±0.05^{b}	3.18±0.18	1.86±0.38^{b}
LB	1.03±0.13^{b}	11.32±0.74	0.26±0.01^{b}	2.65±0.68	2.09±0.07^{ab}
TPLB	0.88±0.03^{c}	12.86±0.63	0.15±0.01^{c}	3.14±0.23	2.05±0.05^{ab}
Experiment2					
LT	0.51±0.05^{b}	11.02±0.50	0.19±0.05	3.37±0.06^{a}	2.20±0.04^{a}
MT	0.88±0.03^{a}	12.86±0.33	0.15±0.03	3.14±0.04^{ab}	2.05±0.05^{b}
HT	0.56±0.03^{b}	12.89±0.24	0.14±0.02	2.82±0.10^{b}	2.04±0.04^{b}
Experiment3					
LL	0.84±0.09	11.33±0.43^{b}	0.40±0.02^{a}	3.23±0.08	2.23±0.06
ML	0.88±0.03	12.86±0.33^{ab}	0.15±0.01^{b}	3.14±0.04	2.05±0.05
HL	0.80±0.07	13.45±0.78^{a}	0.12±0.01^{b}	3.06±0.08	2.27±0.08

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Innovation points

Table 2 | Effects of TP and LB on digestive enzymes in broilers.

Items	Control	TP	LB	TPLB
Intestinal amylase	0.53±0.04	0.45±0.07	0.59±0.08	0.64±0.04
Pancreatic amylase	0.76±0.07	0.71±0.04	0.77±0.02	0.78±0.01
Intestinal lipase	177.67±7.59^{a}	137.39±5.04^{b}	142.00±10.13^{b}	144.40±6.74^{b}
Pancreatic lipase	162.82±8.76^{b}	215.70±10.75^{a}	194.53±3.48^{ab}	217.58±4.15^{a}
Proventriculus pepsin	5.82±0.87^{ab}	3.05±0.08^{b}	5.28±0.46^{ab}	6.39±0.43^{a}
Intestinal trypsase	0.20±0.02	0.22±0.05	0.21±0.02	0.22±0.01
Pancreatic trypsase	0.20 ±0.06^{ab}	0.27±0.03^{a}	0.16±0.02^{b}	0.29±0.03^{a}

Items	LT	MT	HT	LL	ML	HL
Intestinal amylase	0.60±0.05	0.64±0.04	0.58±0.0	0.59±0.05	0.64±0.04	0.59±0.05
Pancreatic amylase	0.77±0.02	0.78±0.01	0.79±0.01	0.77±0.02	0.78±0.01	0.77±0.01
Intestinal lipase	132.24±6.64	144.40±6.74	149.78±8.33	157.59±5.39	144.40±6.74	125.81±4.07
Pancreatic lipase	141.70±4.09^{b}	217.58±4.15^{a}	230.13±4.78^{a}	163.13±6.98^{b}	217.58±4.15^{a}	218.47±5.15^{a}
Proventriculus pepsin	5.85±0.69^{b}	6.39±0.43^{ab}	8.69±0.45^{a}	5.63±0.64	6.39±0.43	5.94±0.26
Intestinal trypsase	0.22±0.01	0.22±0.01	0.22±0.02	0.22±0.02^{a}	0.22±0.01^{a}	0.16±0.02^{b}
Pancreatic trypsase	0.28±0.06	0.29±0.03	0.22±0.02	0.22±0.04	0.29±0.03	0.24±0.05

Conclusion

Long-term treatment of TP and LB improved lipid metabolism, activity of digestive enzymes, and intestinal inflammatory status, which might be associated with the NF-κB signal.

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