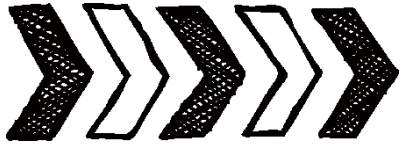
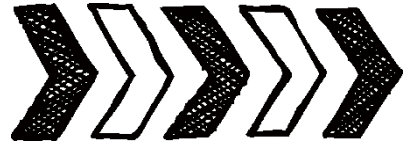


读书报告



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2019.11.17

文章题目

Contents lists available at ScienceDirect

Aquaculture

journal homepage: www.elsevier.com/locate/aquaculture

Effect of *Silybum marianum* seeds as a feed additive on growth performance, serum biochemical indices, antioxidant status, and gene expression of Nile tilapia, *Oreochromis niloticus* (L.) fingerlings

Mohamed S. Hassaan[a,*], Eman Y. Mohammady[a], Mohamed R. Soaudy[a], Hoda A.S. El-Garhy[b], Mahmoud M.A. Moustafa[b], Shereen A. Mohamed[b], Ehab R. El-Haroun[c]

[a] *Aquaculture Division, Fish Nutrition Research Laboratory, National Institute of Oceanography and Fisheries (NIOF), Egypt*
[b] *Genetics and Genetic engineering Department, Faculty of Agriculture, Benha University, Qalubia, Egypt*
[c] *Animal Production Department, Faculty of Agriculture, Cairo University Cairo, Egypt*

目 录 /contents

前言

前　言

水飞蓟

- 水飞蓟的果实内含有黄酮醇的同分异构体，称为水飞蓟素。水飞蓟素具有抗炎作用，是一种抗氧化剂，被用于治疗各种肝脏损伤。
- 可以将水飞蓟等中草药作为改善水生生物健康的替代方法。此外，其对鱼和周围的环境具有低副作用。

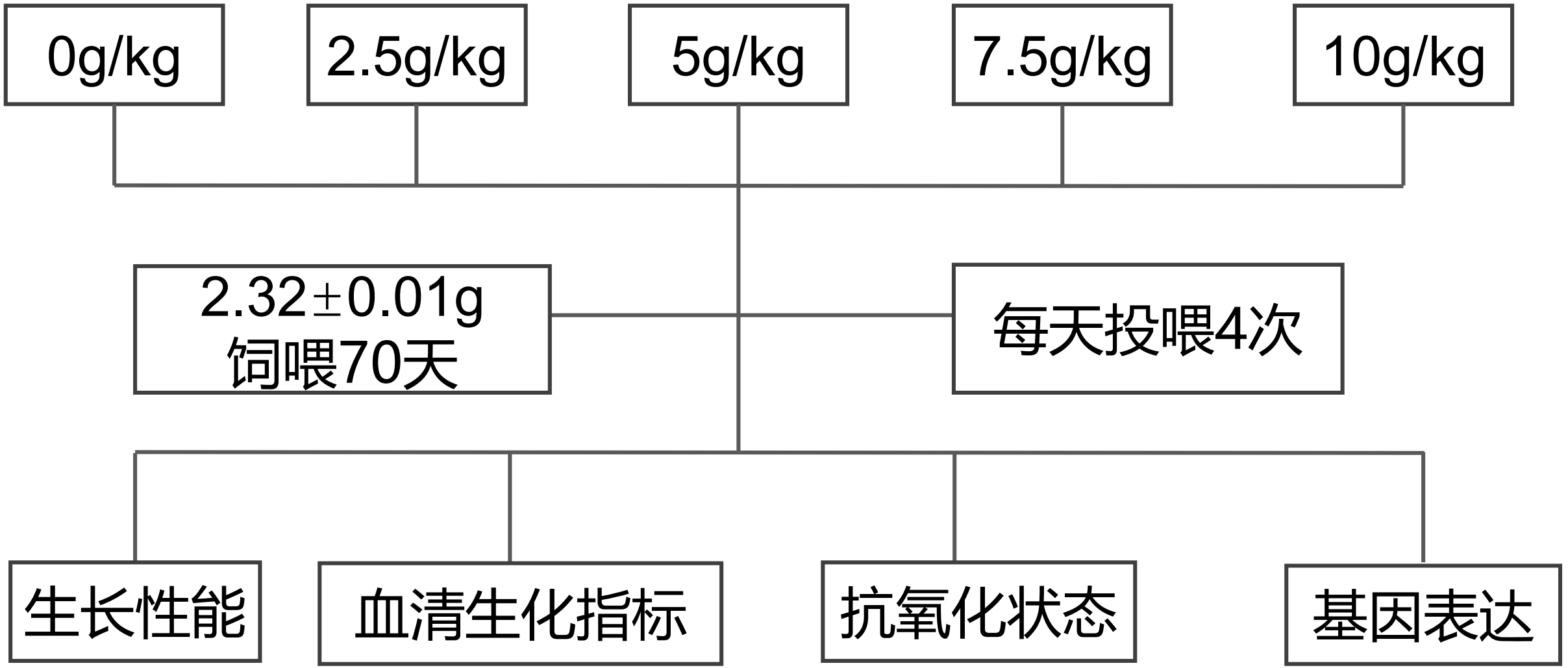
前　言

- 提高异育银鲫的生长性能, (Yi *et al*.,2012)
- 降低虹鳟血浆胆固醇含量(Banaee *et al*., 2011),
- 对鲤鱼被CCl_4损伤的肝脏起保护作用(Jia *et al*., 2013),
- 改善了虹鳟鱼的免疫系统和抗氧化应激能力(Ahmadi *et al*., 2012)。

第二章

材料与方法

材料与方法


0g/kg
2.5g/kg
5g/kg
7.5g/kg
10g/kg
2.32±0.01g
饲喂70天
每天投喂4次
生长性能
血清生化指标
抗氧化状态
基因表达

材料与方法

Diets	Flavonolignans (mg kg^{-1} dry weight)					
	Taxifolin	Silychristin	Silydianin	Silybin A	Silybin B	Iso Sb A + B
2.5 g kg^{-1}	7.25	6.25	2.50	4.25	6.50	2.10
5 g kg^{-1}	14.50	12.50	5.00	8.50	13.00	4.20
7.5 g kg^{-1}	21.75	18.75	7.50	12.75	19.50	6.30
10 g kg^{-1}	29.00	25.00	10.00	17.00	26.00	8.40

结 [redacted] 果

结　　果

Growth performance and feed utilization of Nile tilapia fed diet with different levels of *Silybum marianum* seeds for 70 days.

	Experimental treatments					*P* value
	Control	2.5 g kg^{-1}	5 g kg^{-1}	7.5 g kg^{-1}	10 g kg^{-1}	
Initial body weight (g fish^{-1})	2.30 ± 0.22	2.26 ± 0.31	2.36 ± 0.33	2.27 ± 0.14	2.40 ± 0.18	0.986
Final body weight (g fish^{-1})	20.70 ± 1.00^{c}	23.61 ± 0.99^{b}	23.81 ± 0.69^{b}	26.58 ± 0.96^{a}	26.25 ± 0.85^{a}	0.001
Weight gain (g fish^{-1})	18.40 ± 0.56^{c}	21.34 ± 0.87^{b}	21.44 ± 0.92^{b}	23.58 ± 0.88^{a}	24.32 ± 0.69^{a}	0.012
Specific growth rate (% day^{-1})	3.14 ± 0.04^{c}	3.35 ± 0.02^{b}	3.29 ± 0.01^{b}	3.52 ± 0.05^{a}	3.42 ± 0.02^{a}	0.001
Feed intake (g fish^{-1})	28.44 ± 2.36	29.03 ± 2.31	30.49 ± 2.09	30.26 ± 2.16	29.57 ± 2.07	0.002
Feed conversion ratio	1.55 ± 0.21^{a}	1.36 ± 0.15^{b}	1.42 ± 0.12^{b}	1.24 ± 0.18^{c}	1.23 ± 0.19^{c}	0.045
Apparent protein utilization %	57.48 ± 3.65^{b}	66.00 ± 2.21^{a}	63.07 ± 2.69^{a}	67.66 ± 3.12^{a}	66.46 ± 2.44^{a}	0.002
Protein efficiency ratio	2.33 ± 0.01^{c}	2.54 ± 0.02^{b}	2.42 ± 0.02^{b}	2.77 ± 0.01^{a}	2.78 ± 0.02^{a}	0.001
Survival rate%	92.33 ± 2.1^{b}	96.00 ± 1.5^{a}	97.00 ± 2.3^{a}	98.00 ± 1.6^{a}	97.65 ± 2.2^{a}	0.012

Means followed by different letters in the same row are significantly different ($P < .05$).

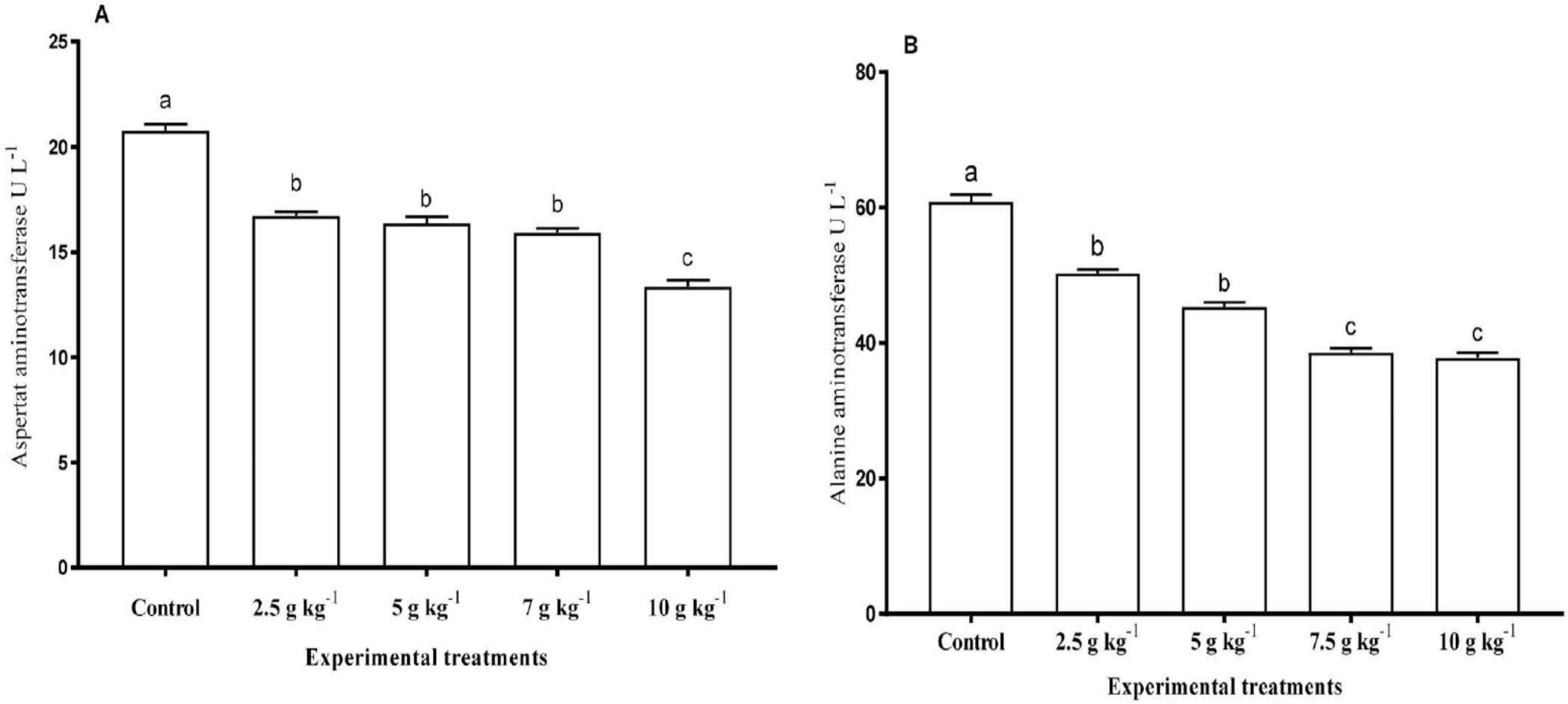
结　果

Proximate composition (g kg^{-1}) of Nile tilapia fed diet with different levels of *Silybum marianum* seeds for 70 days.

	Experimental treatments					P value
	Control	2.5 g kg^{-1}	5 g kg^{-1}	7.5 g kg^{-1}	10 g kg^{-1}	
Dry matter	230.60 ± 0.78	225. 7 ± 0.82	245. 4 ± 0.96	216. 1 ± 0.88	220.4 ± 0.96	0.086
Protein content	568.80 ± 1.12^{c}	568.82 ± 1.85^{c}	569.60 ± 1.75^{c}	578.70 ± 1.11^{b}	588.82 ± 0.96^{a}	0.012
Ash content	150.00 ± 1.17^{c}	169.52 ± 1.85^{b}	172.50 ± 1.57^{b}	180.00 ± 2.01^{a}	177.50 ± 1.19^{a}	0.0001
Lipid content	206.40 ± 1.12^{a}	162.60 ± 1.11^{b}	168.00 ± 0.98^{b}	151.80 ± 0.97^{c}	133.50 ± 2.01^{d}	0.0001

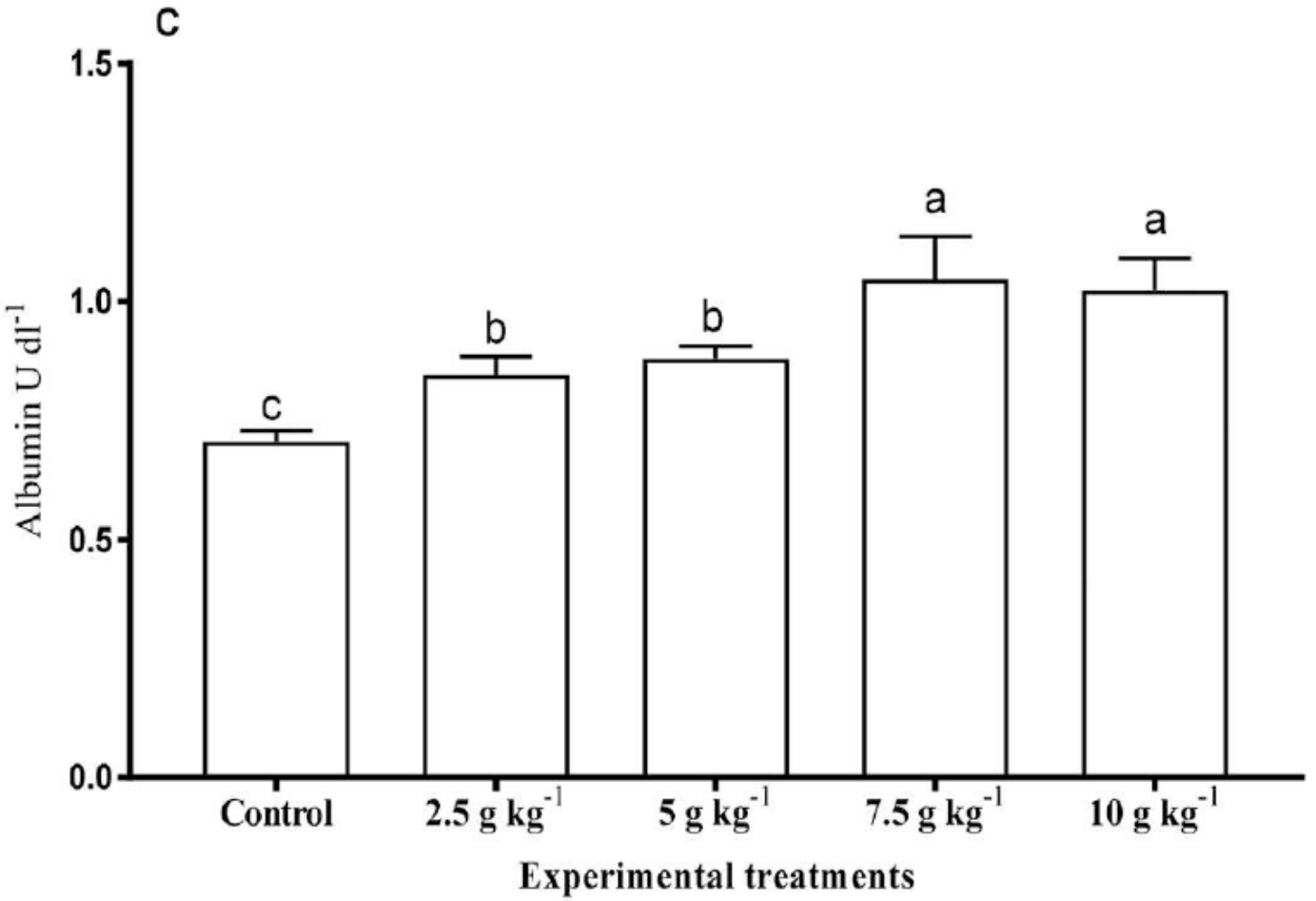
Means followed by different letters in the same row are significantly different ($P < .05$).

结　果



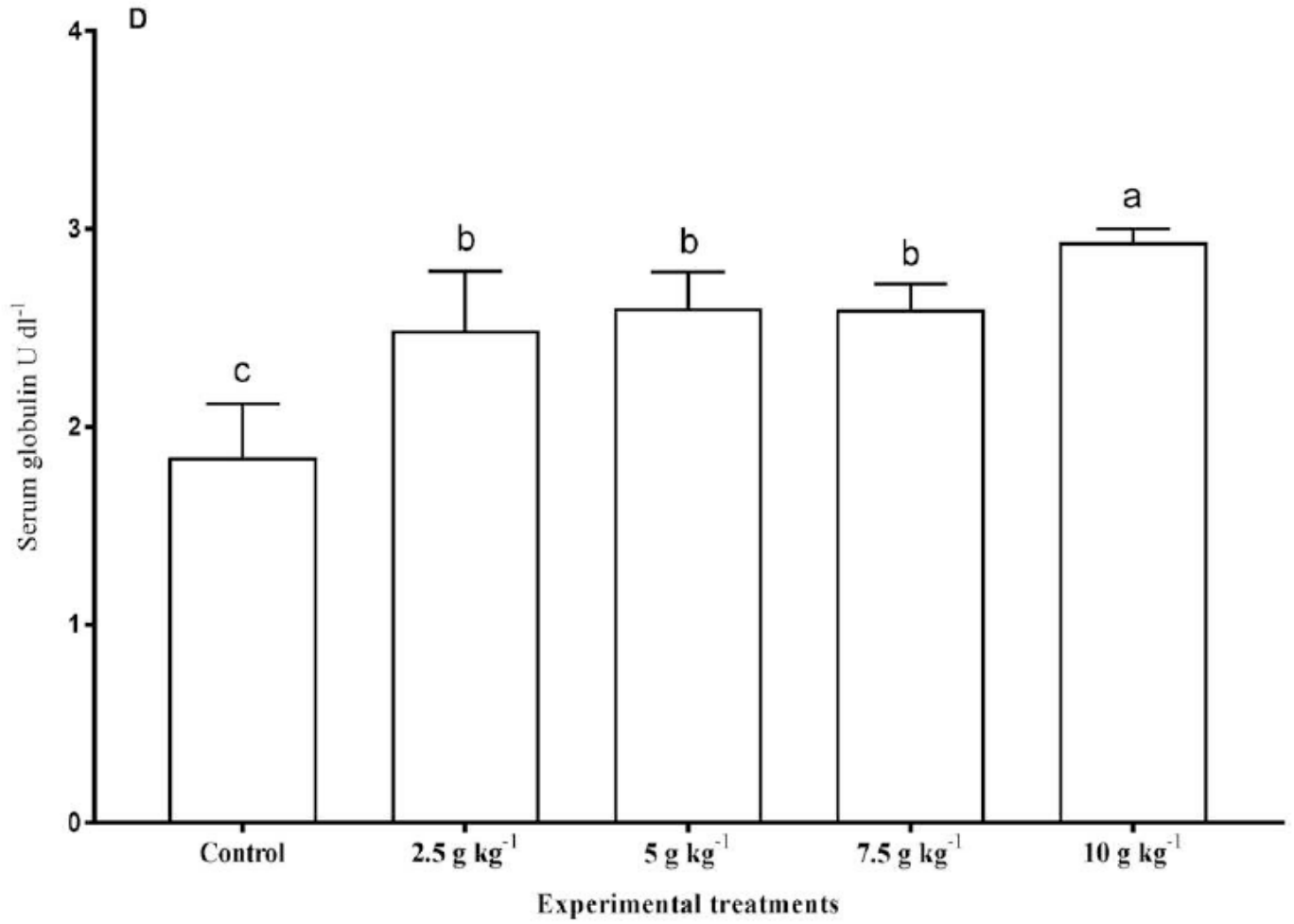
不同水飞蓟素的添加量对ALT、AST的影响

结　果



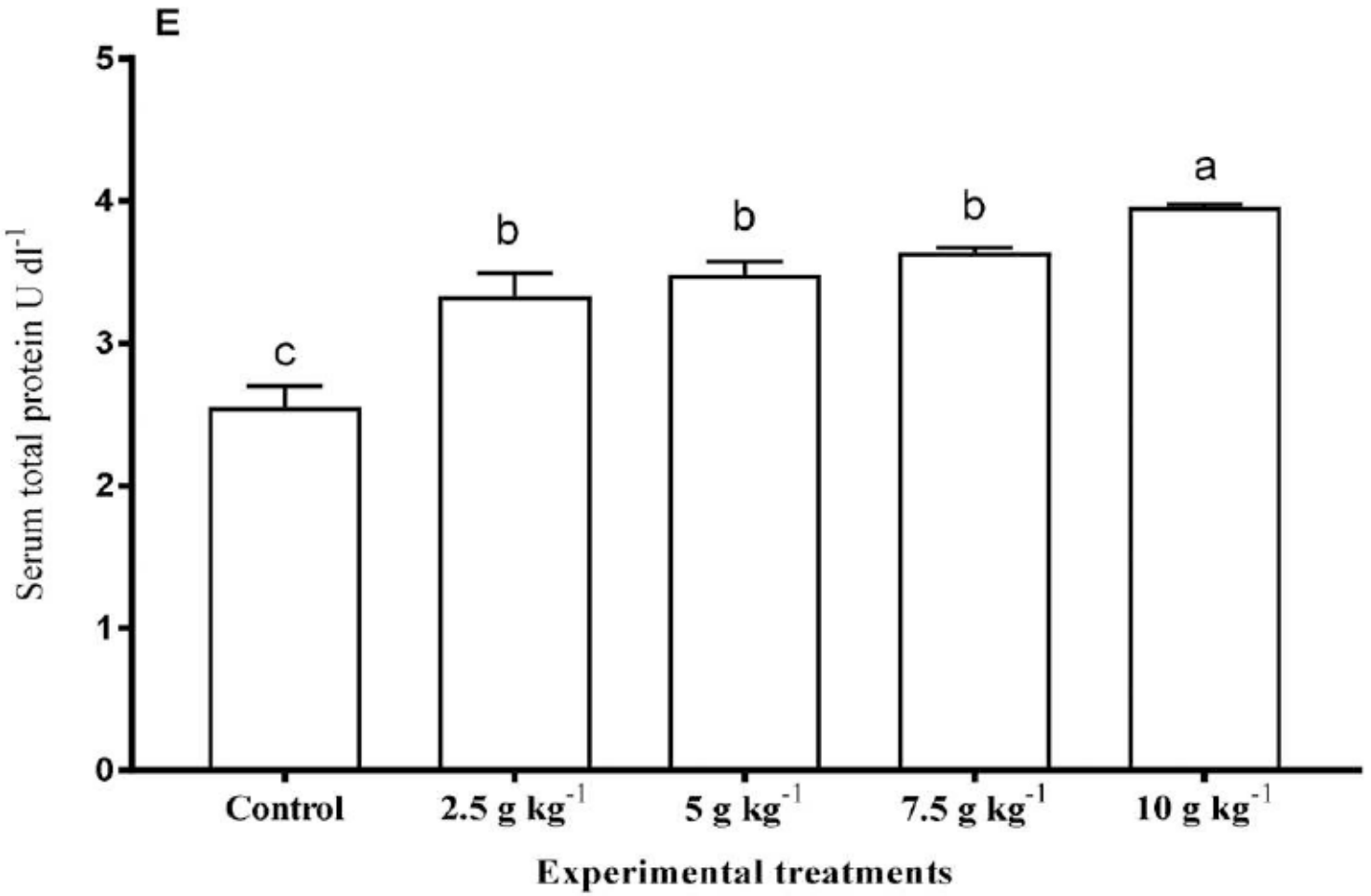
不同水飞蓟素的添加量对血清白蛋白的影响

结　果



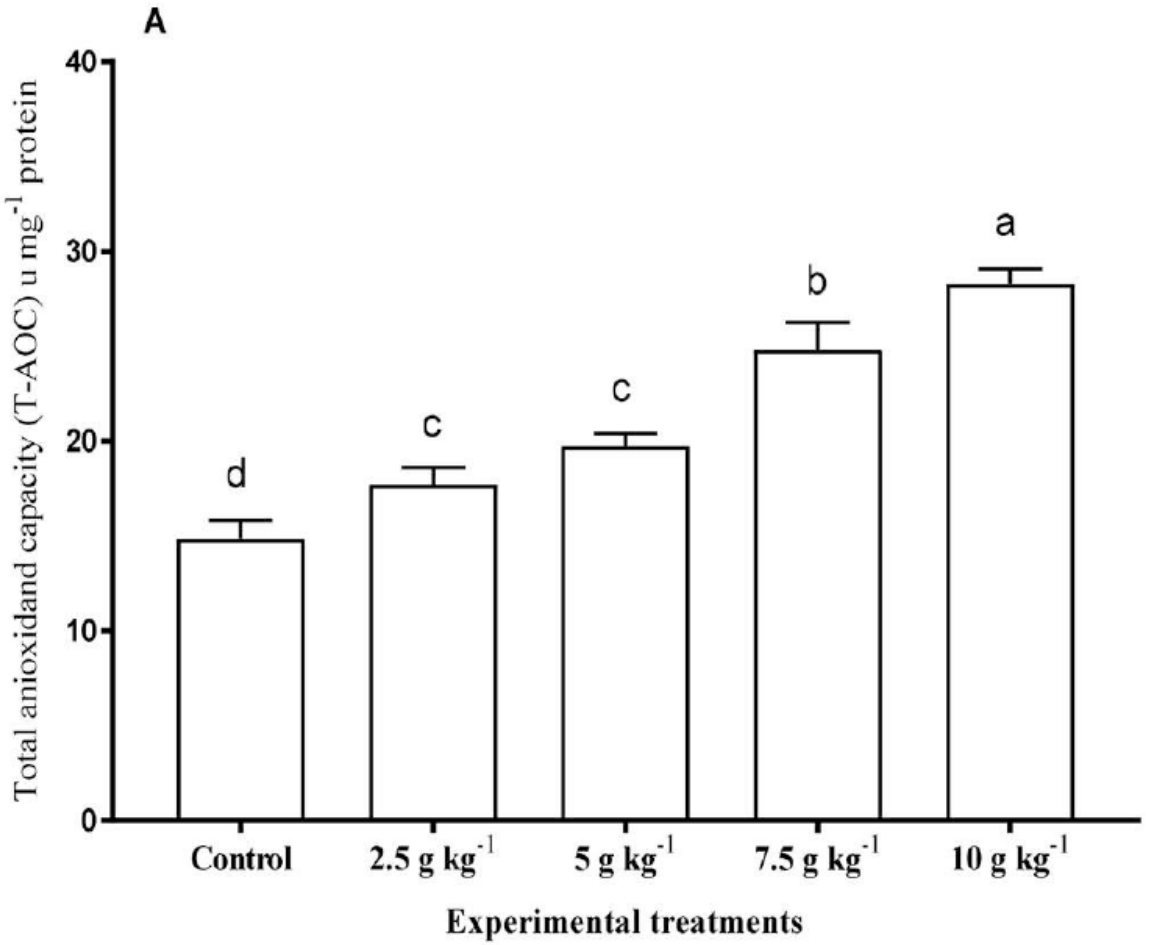
不同水飞蓟素的添加量对球蛋白的影响

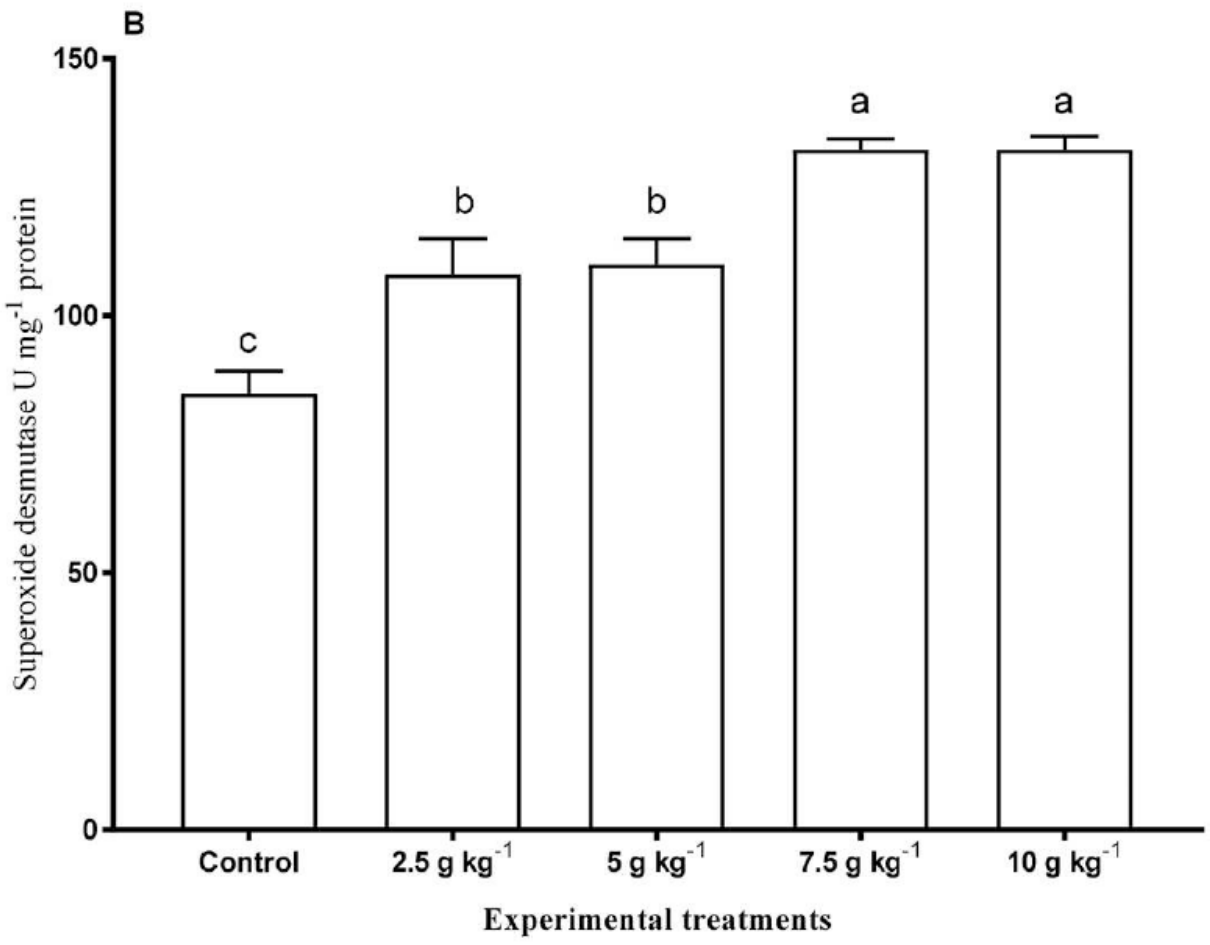
结　果



不同水飞蓟素的添加量对总蛋白的影响

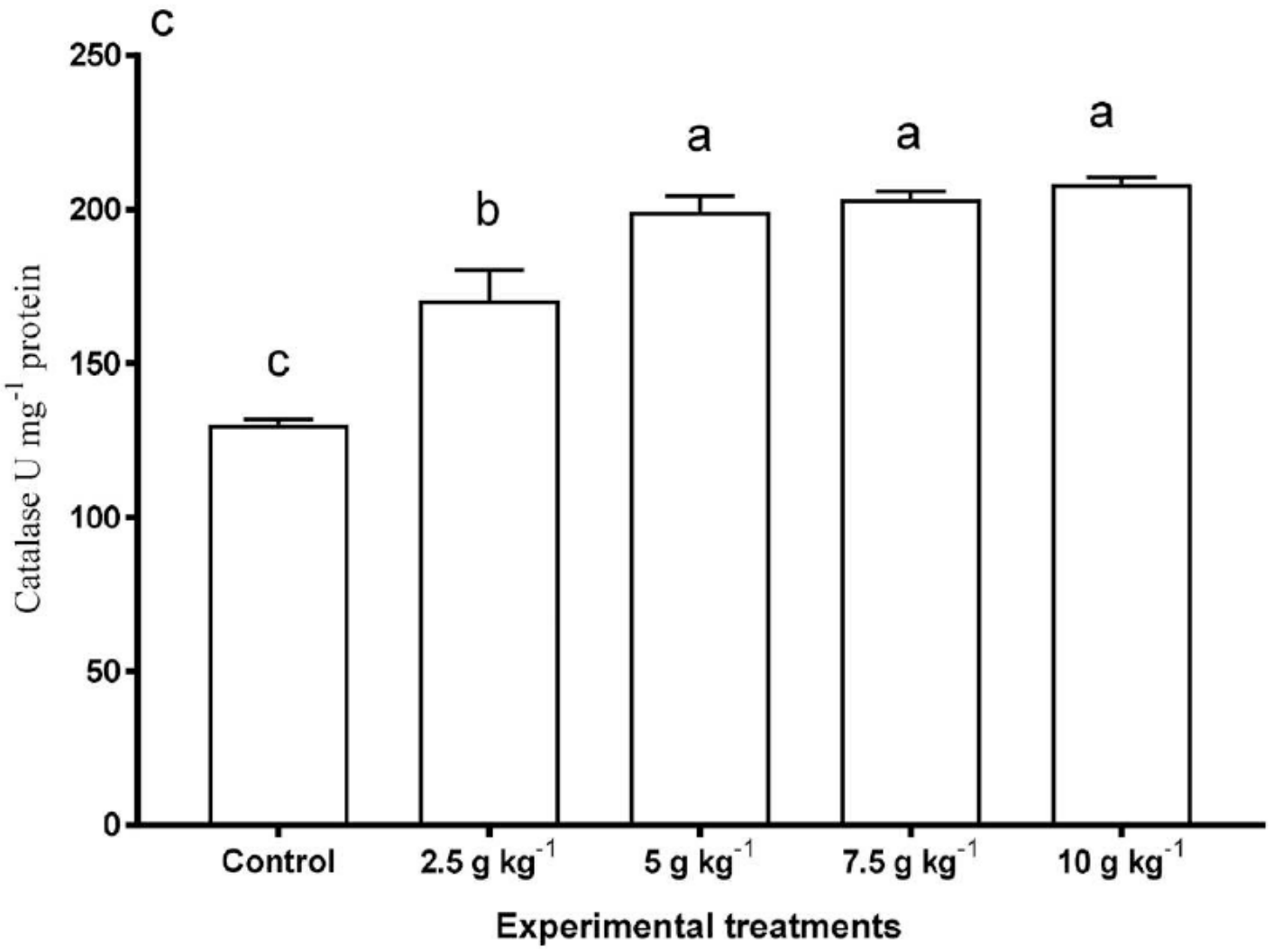
结　果





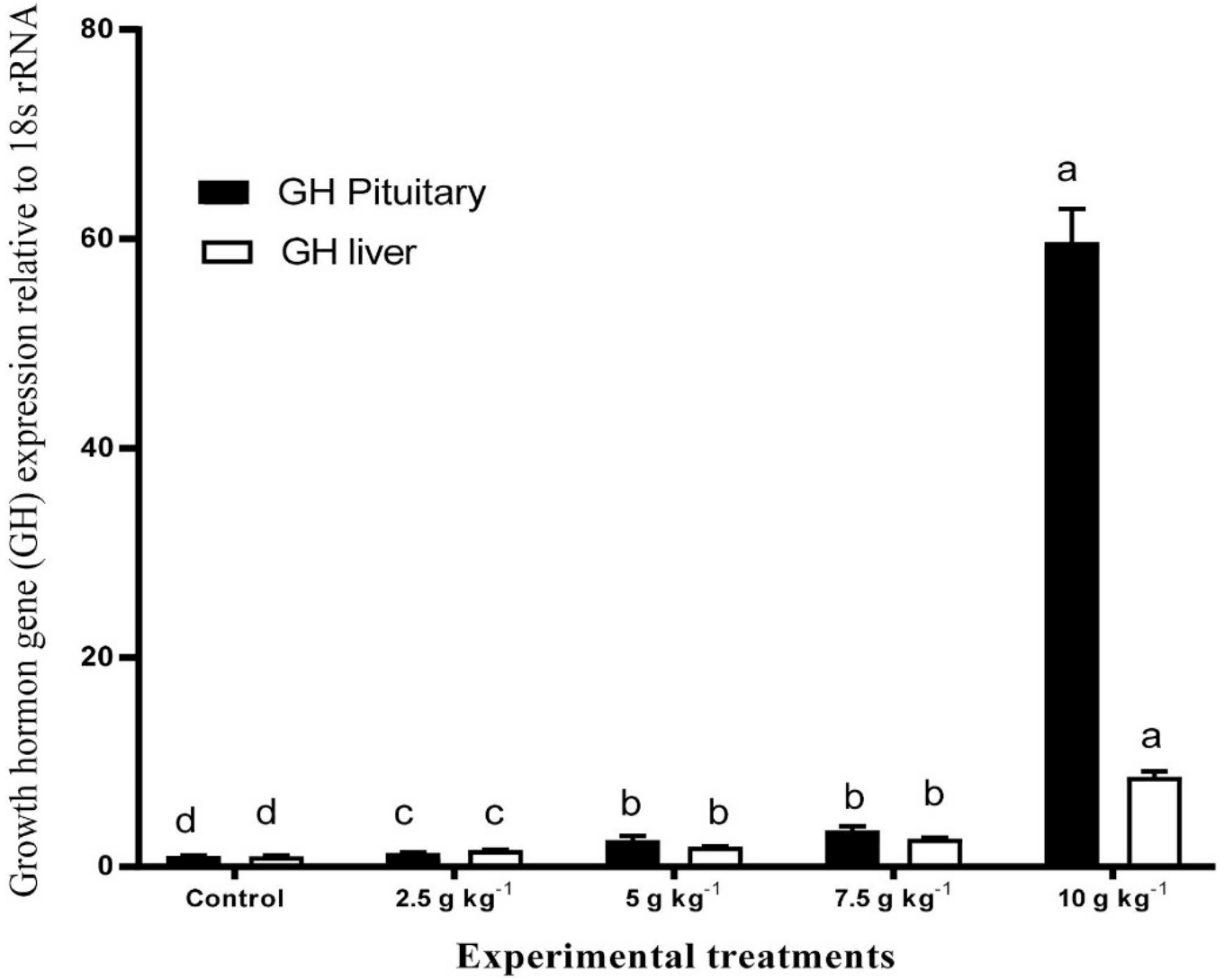
不同水飞蓟素的添加量对总抗氧化能力，SOD的影响

结　果



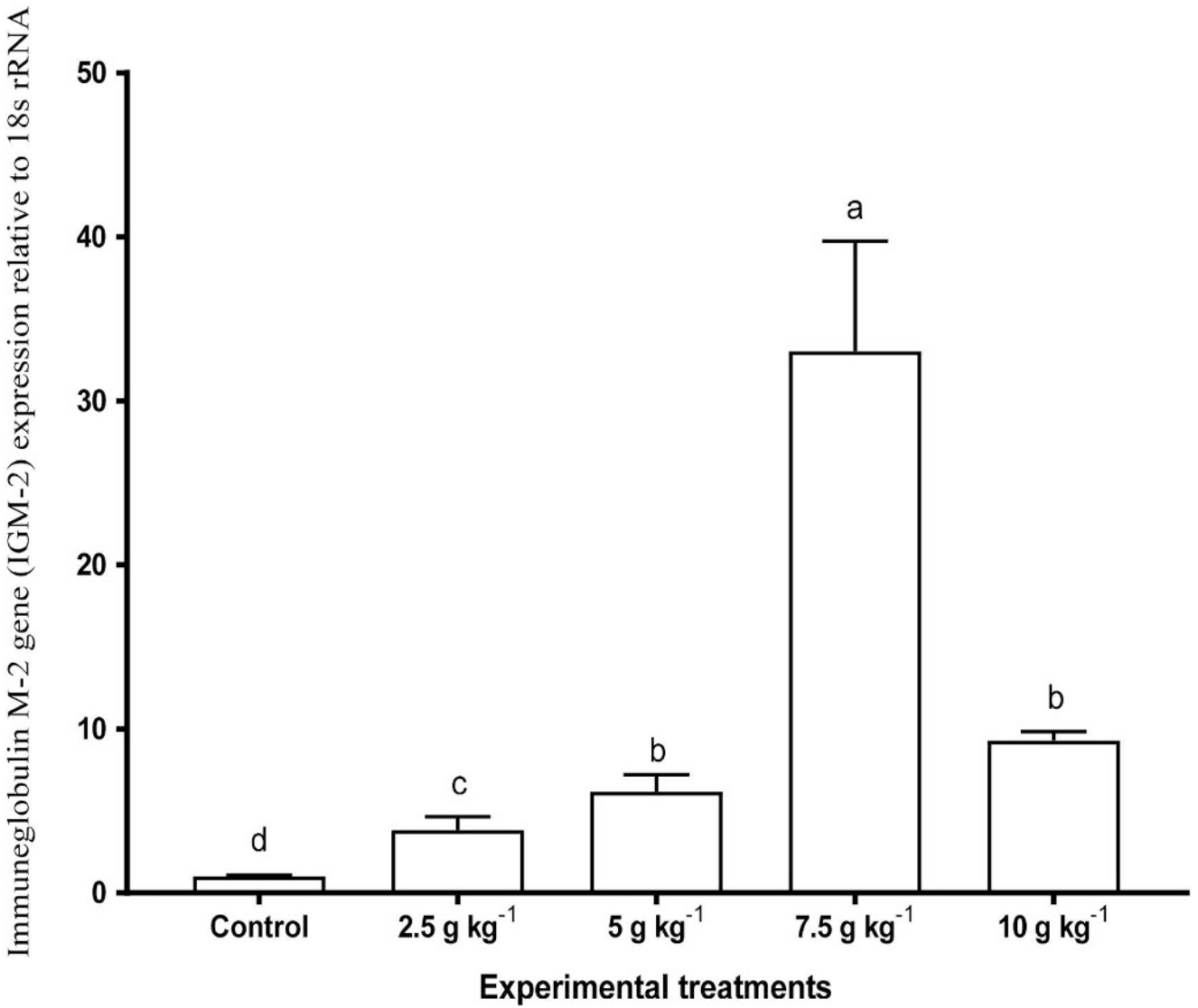
不同水飞蓟素的添加量对CAT的影响

结　果



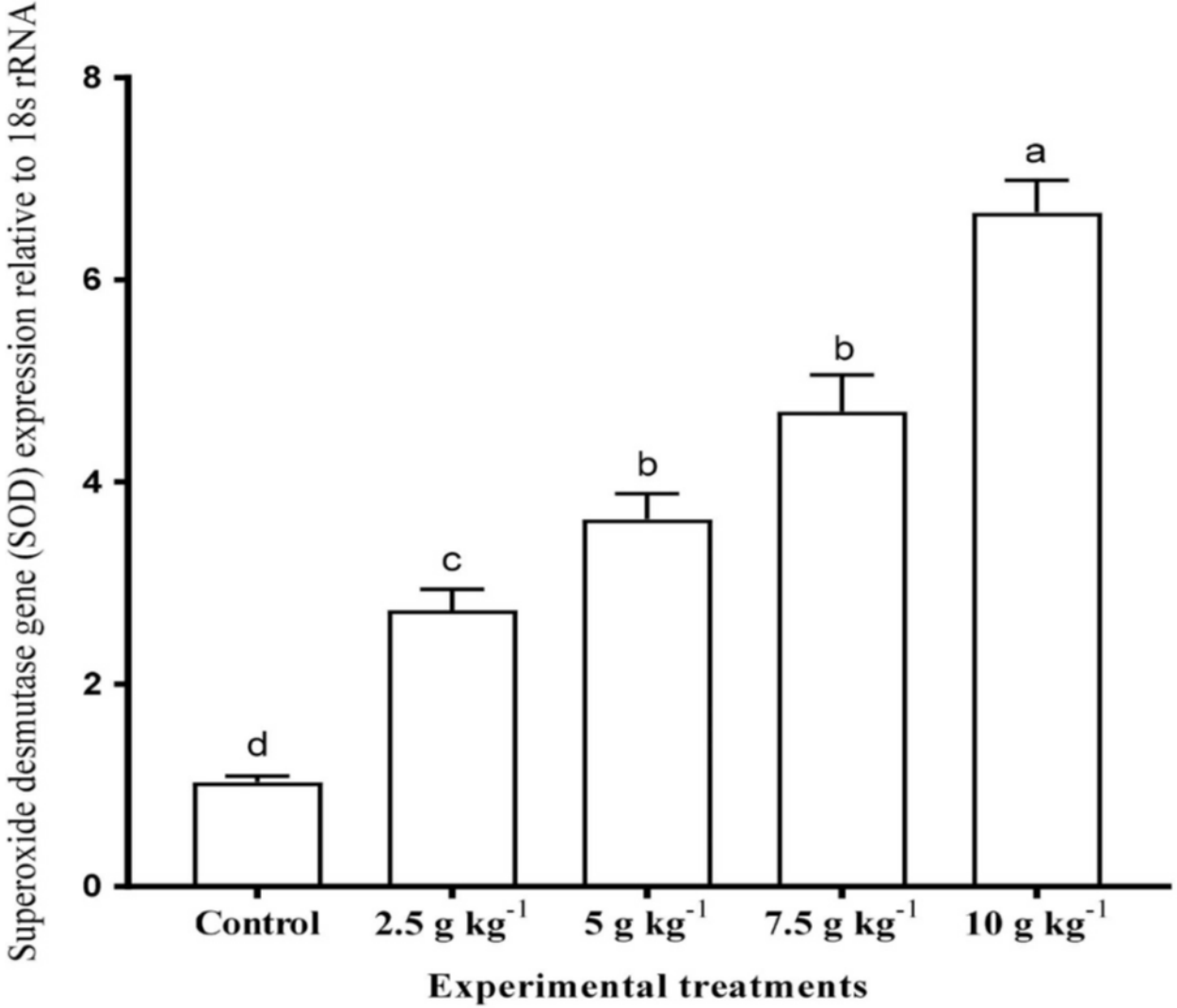
不同水飞蓟素的添加量对生长激素表达量的影响

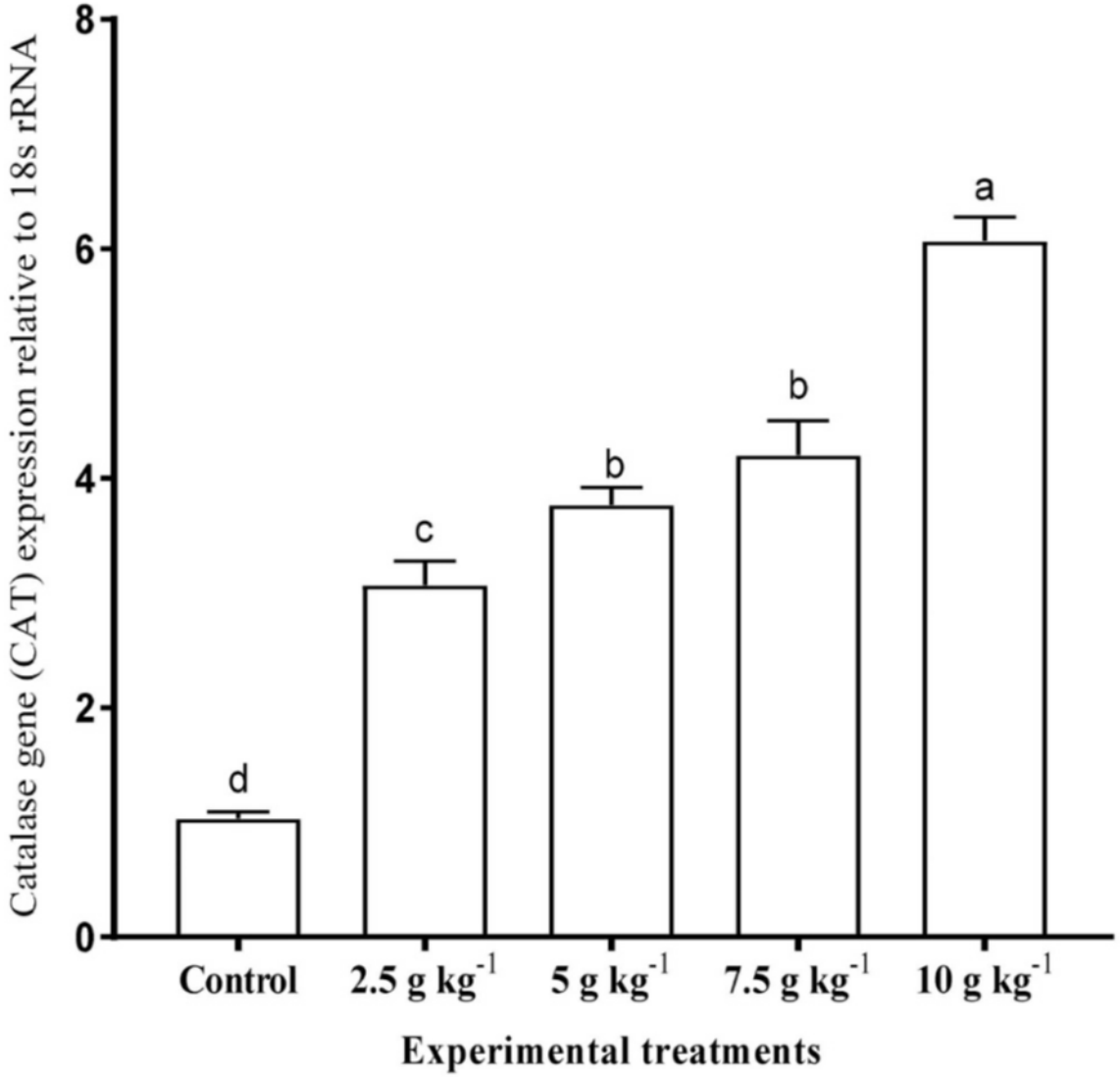
结　果



不同水飞蓟素的添加量对IGM-2表达量的影响

结　果





不同水飞蓟素的添加量对SOD,CAT的影响（QPCR）

总 结

总　结

水飞蓟素提取物可以提高营养物质的消化率和有效性，从而提高饲料利用率，提高蛋白质合成。

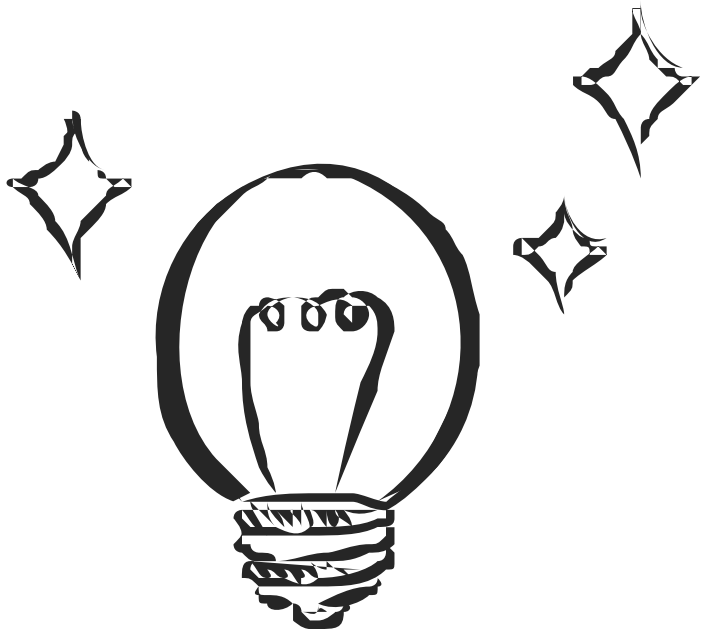
水飞蓟素可以降低脂质在鱼体内的积累

水飞蓟素可以增强鱼体免疫及其抗氧化性。

结果表明在饲料添加7.5 g或10 g/ kg(92.25和123 mg/ kg水飞蓟素)，可促进生长，增强免疫反应，提高抗氧化活性和基因表达

讨 论

讨　论



水飞蓟素在鱼体内的研究还不完全。其对鱼类健康状况的作用模式还有待于进一步的研究。

敬请各位老师批评指正