



The effect of dietary vitamin supplementation on maternal performance and larval quality of the prawn *Macrobrachium rosenbergii*

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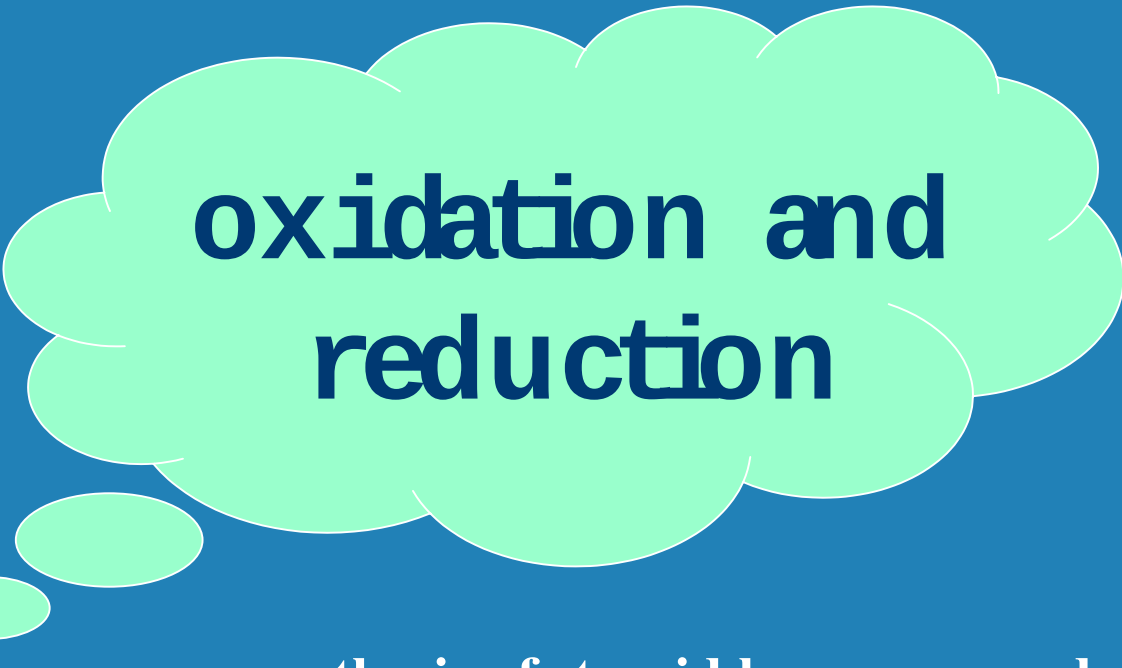
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Background



**oxidation and
reduction**

C

synthesis of steroid hormones and collagen
increases tolerance to toxicants and stressors
improves immune response

Background



antioxidant

E

Deficiency causes...

- * delay in ovarian development
- * lower egg hatchability
- * decreased egg strength
- * lower survival of fish fry

Recommended levels...

...for juvenile crustaceans

ascorbic acid.....40-200 $\mu\text{g AA/g}$

tocopherol.....100 $\mu\text{g } \alpha\text{-T/g}$

Experimental diets

* increasing levels of AA :

Low.....59 µg/g

Medium122 µg/g

High919 µg/g

+

250 - 315
µg α-TA/g

* 4th diet :

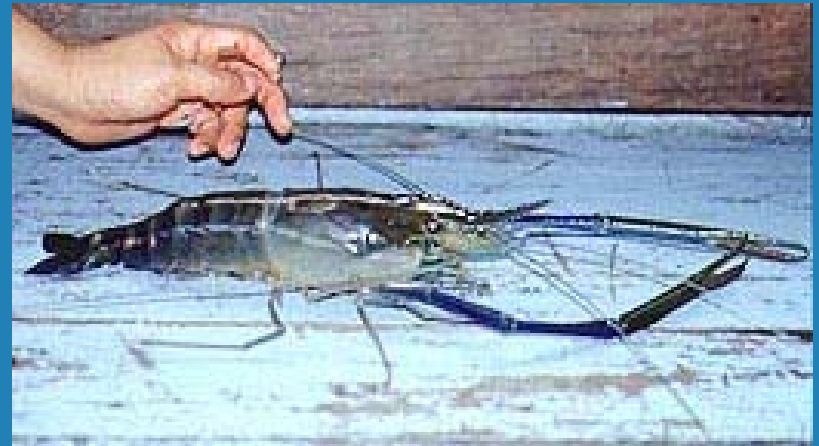
Extra.....957 µg AA/g

+

900
µg α-TA/g

Procedures

- ✧ 155 days
- ✧ 6 females per diet
- ✧ 10 males in 'rotation'
- ✧ recirculation system



Parameters measured

- * fecundity (eggs/g)

- * breeding frequency

- * egg size

weight and volume

- * hatching rate

- * larval viability

up to 8 d post-hatch

- * larval size

- * tolerance to ammonia

24 h LC₅₀

newly hatched and

8 day-old larvae

Biochemical analysis

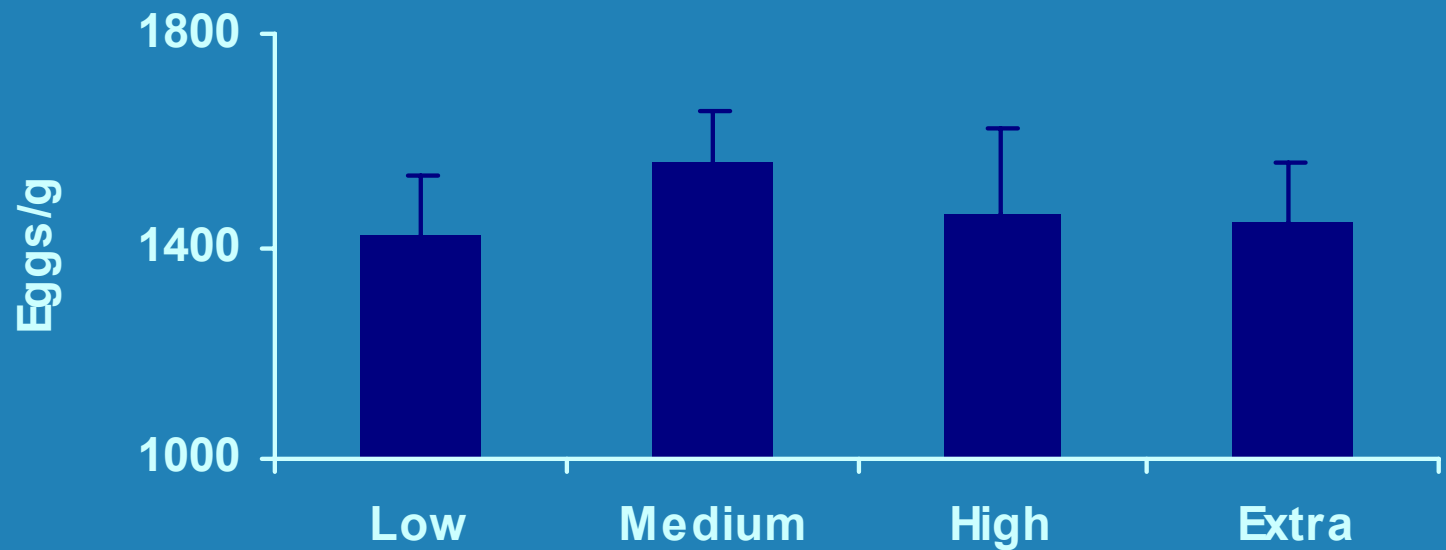
AA and tocopherols in ...

- diets
- eggs
- newly hatched larvae
- 8 day-old larvae
- female tissues

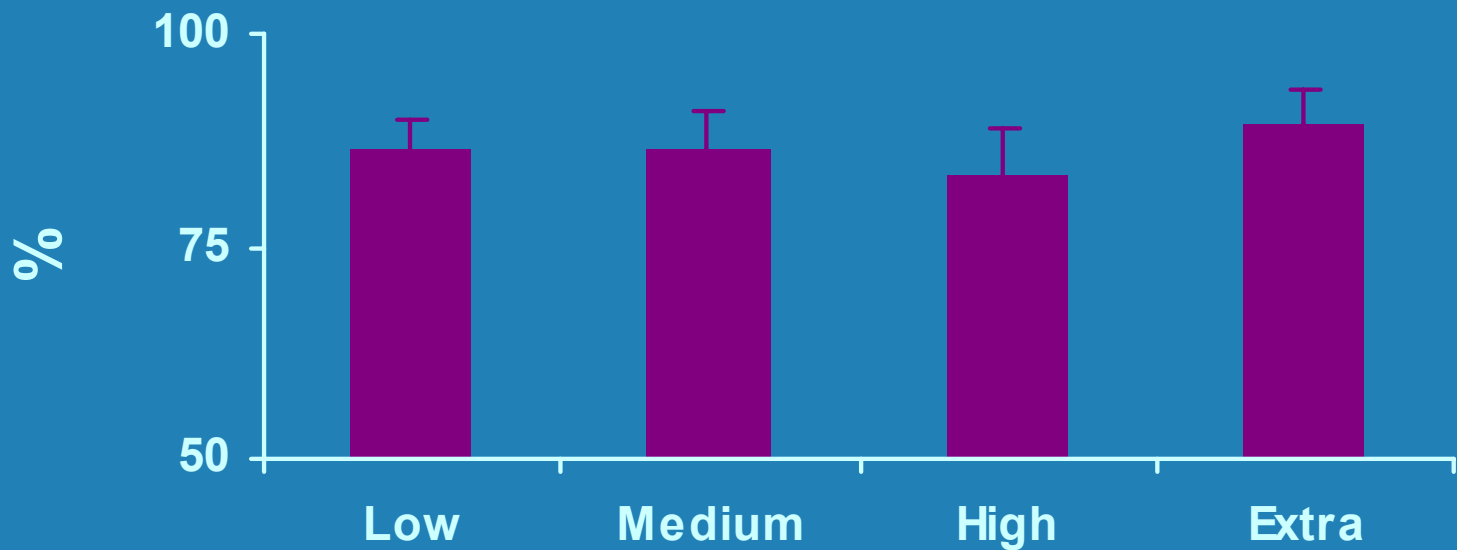


Results

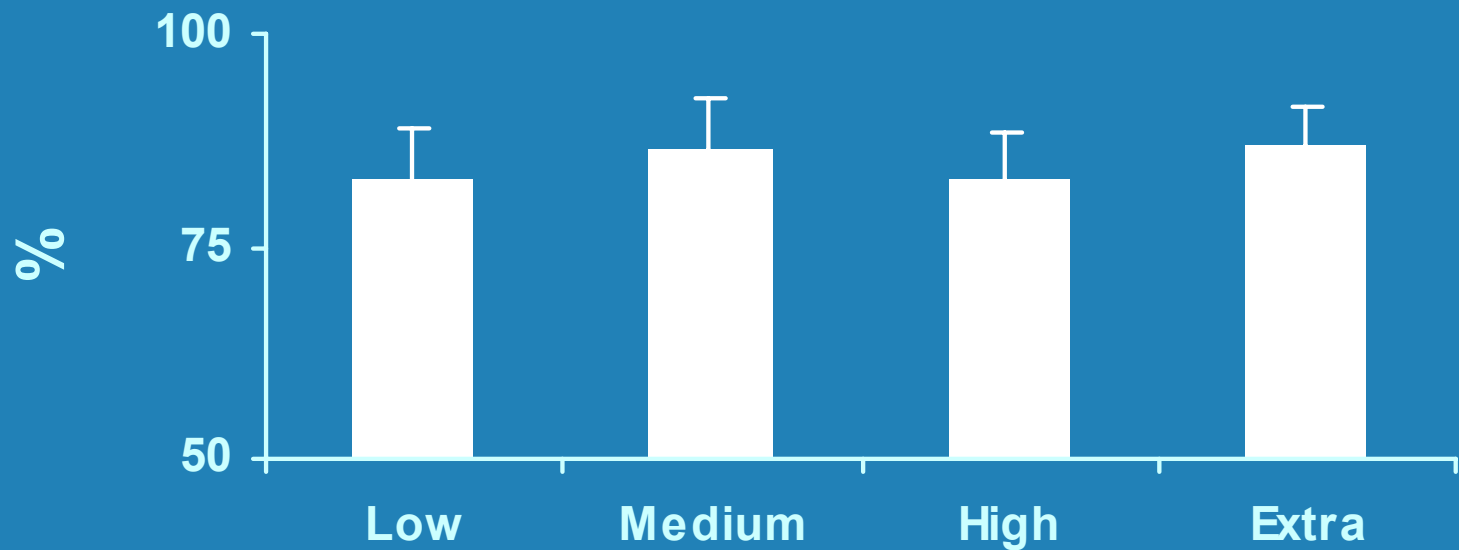
Fecundity



Egg hatching rate



Larval survival at day 8



A decorative vertical bar on the left side of the slide, featuring a blue and green gradient with a white sphere. A horizontal line extends from the sphere across the slide.

Reproductive parameters?

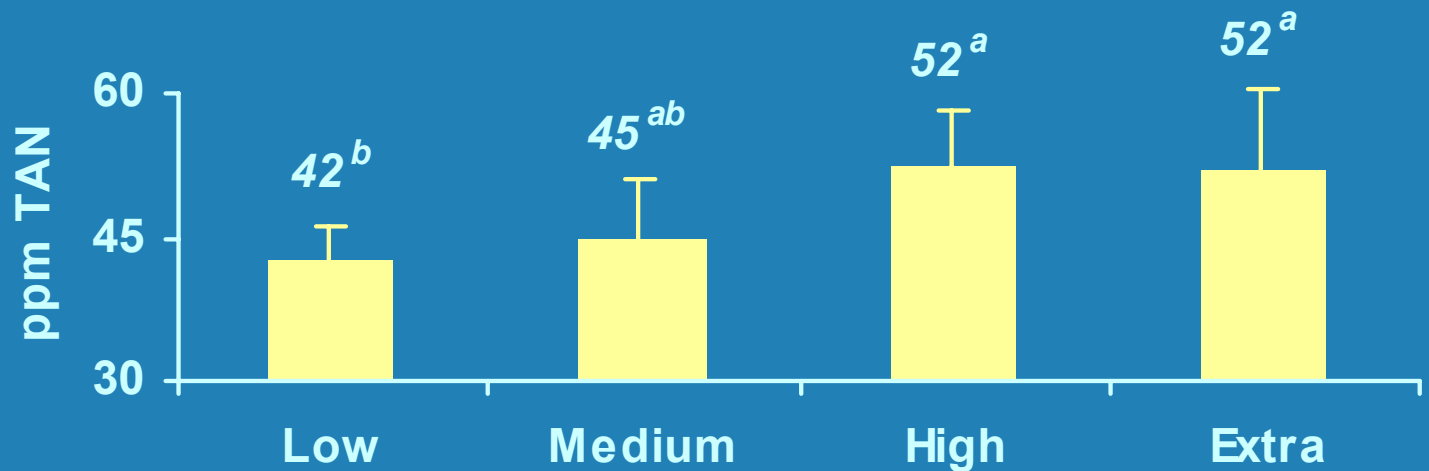
No differences !

A decorative vertical bar on the left side of the slide, featuring a blue and green gradient with a white spiral pattern. A horizontal line extends from the bar across the slide.

Larval quality ?

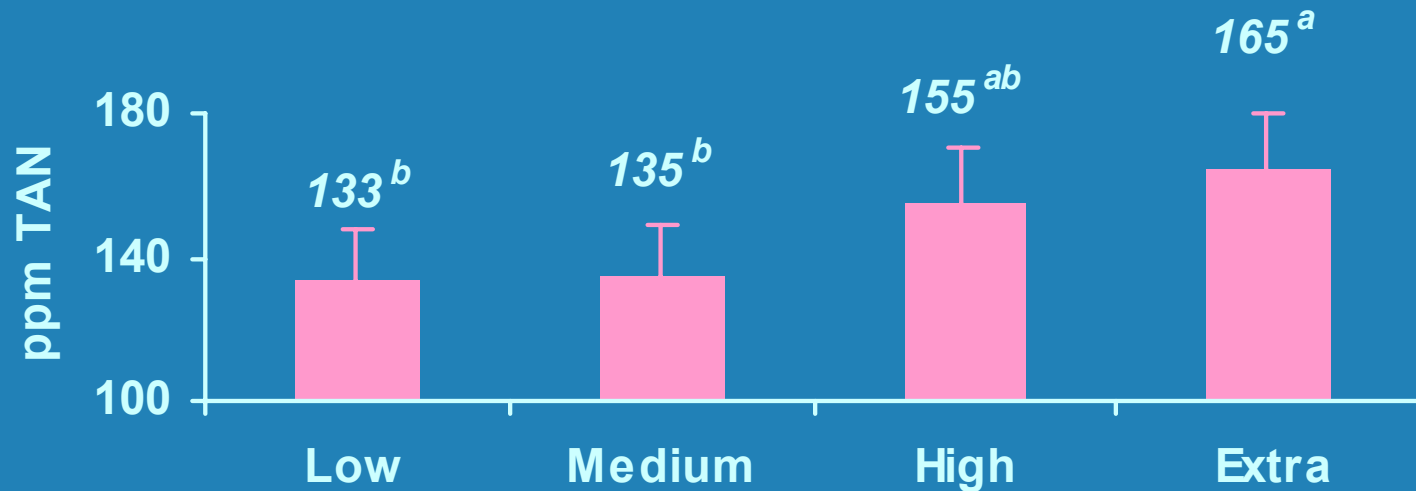
Ammonia tolerance (24h LC₅₀)

newly hatched larvae

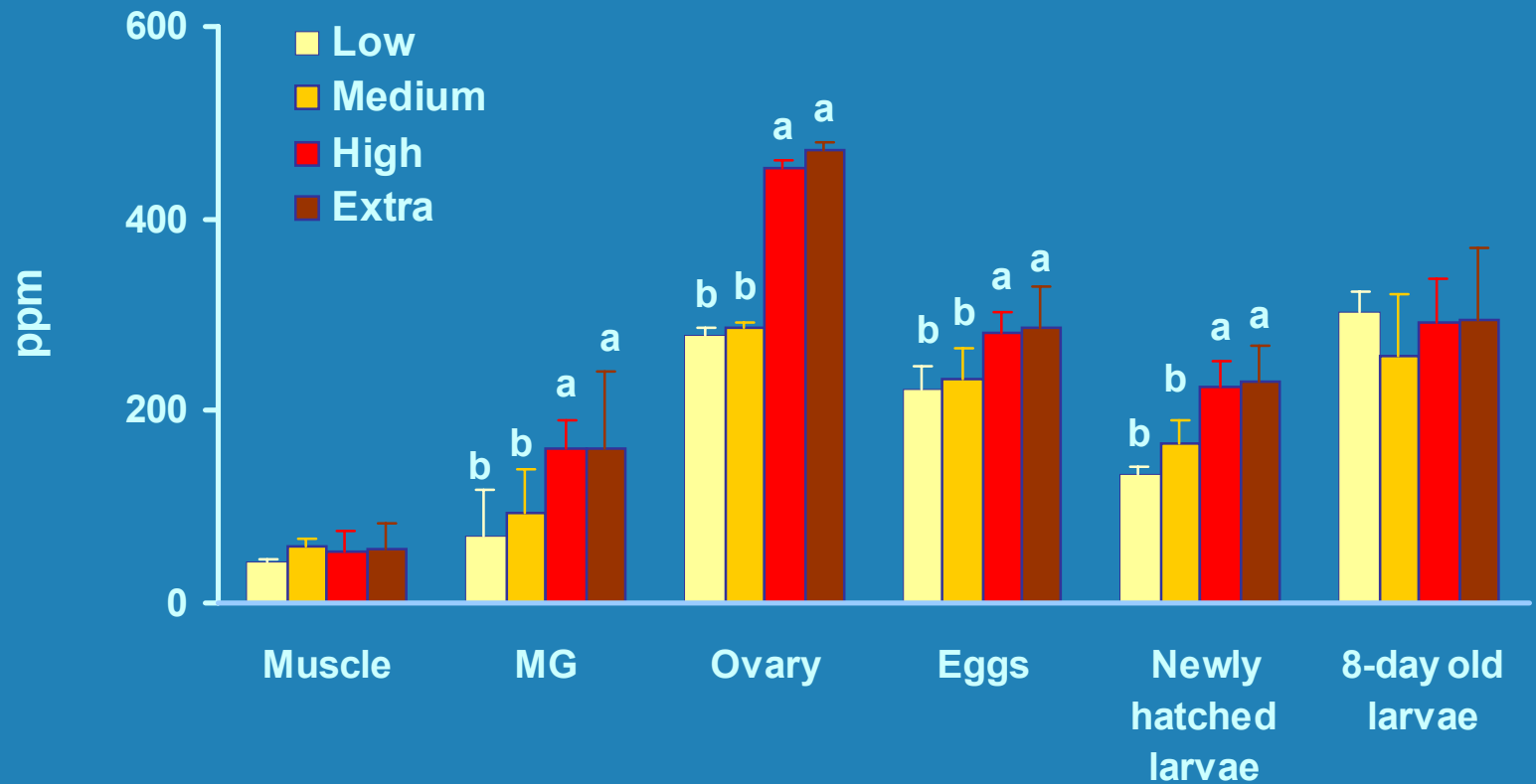


Ammonia tolerance (24h LC₅₀)

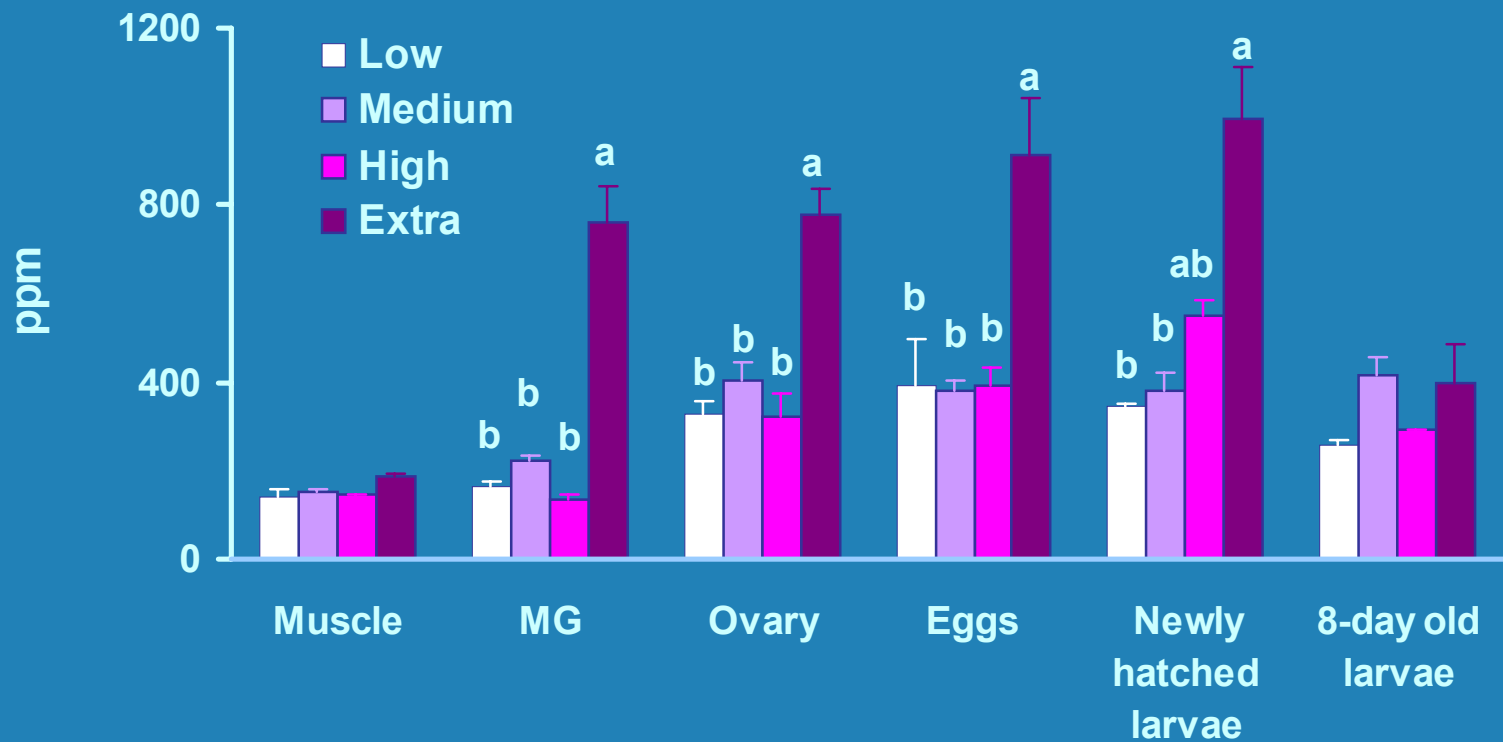
8 day-old larvae



AA levels



α -tocopherol levels



Conclusion

60 μg AA/g and 300 μg α -TA/g



enough to ensure reproduction
and larval viability

but higher levels (900 $\mu\text{g}/\text{g}$)
might increase larval quality



Thank you