

Effects of melatonin feed on histology and antioxidant ability of the gills and oxygen consumption of Chinese mitten crab (*Eriocheir sinensis*), exposed to acute hypoxia stress.



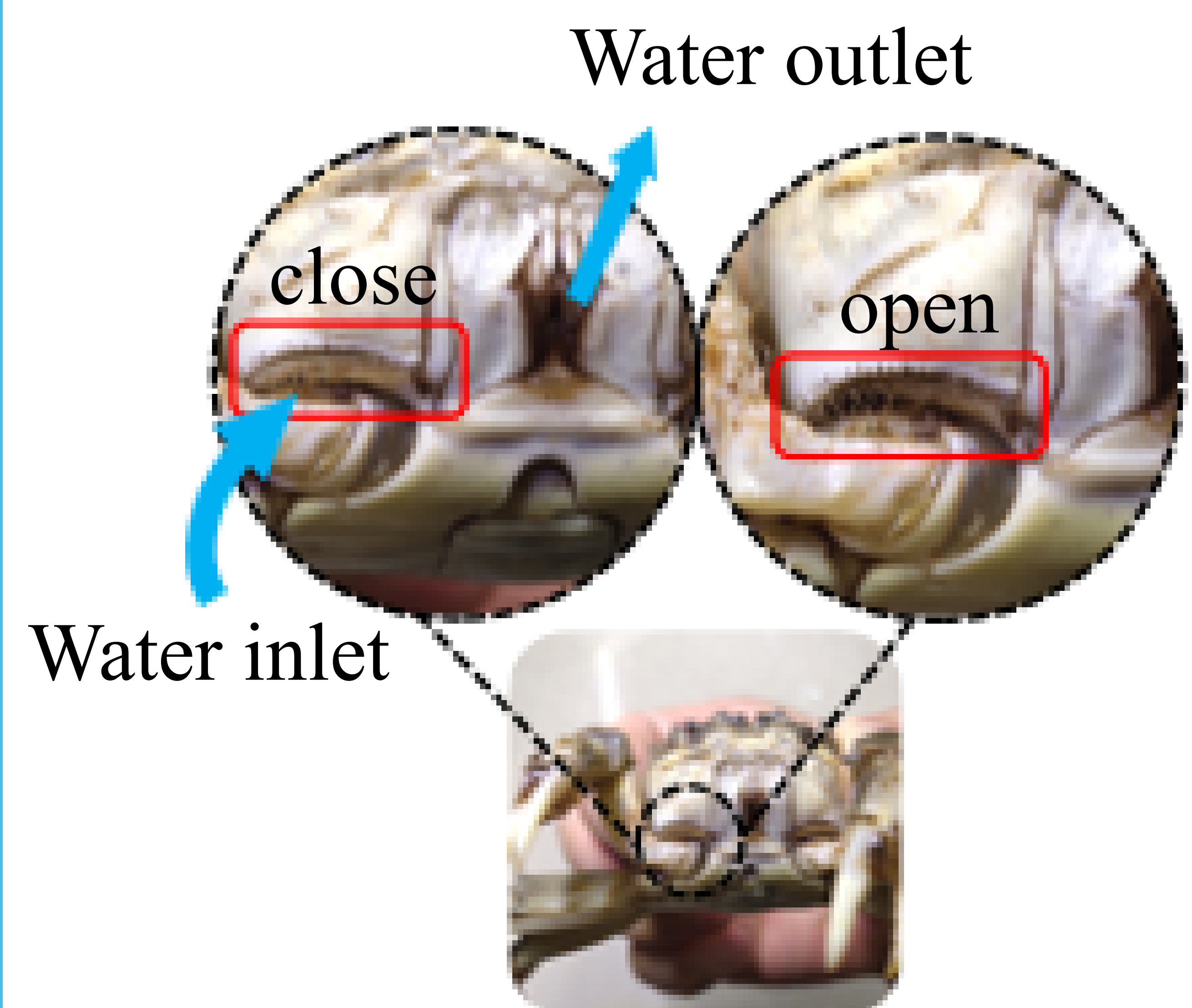
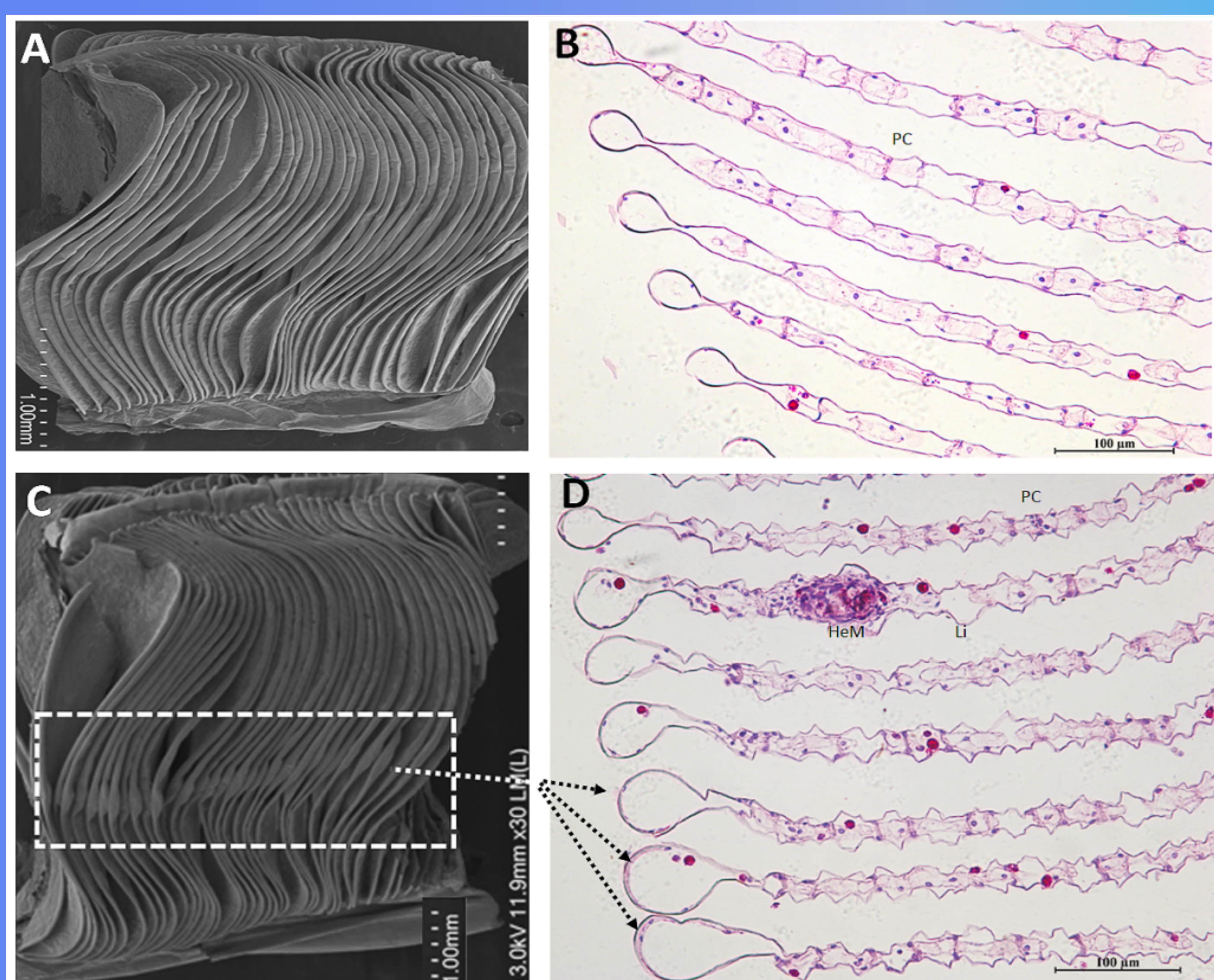
Purpose:

This study was designed to evaluate the damage of the gill structure and function of *E. sinensis* under acute hypoxia (DO=0.5 mgO₂L⁻¹, 4h) and the anti-injury effects of melatonin (MT).

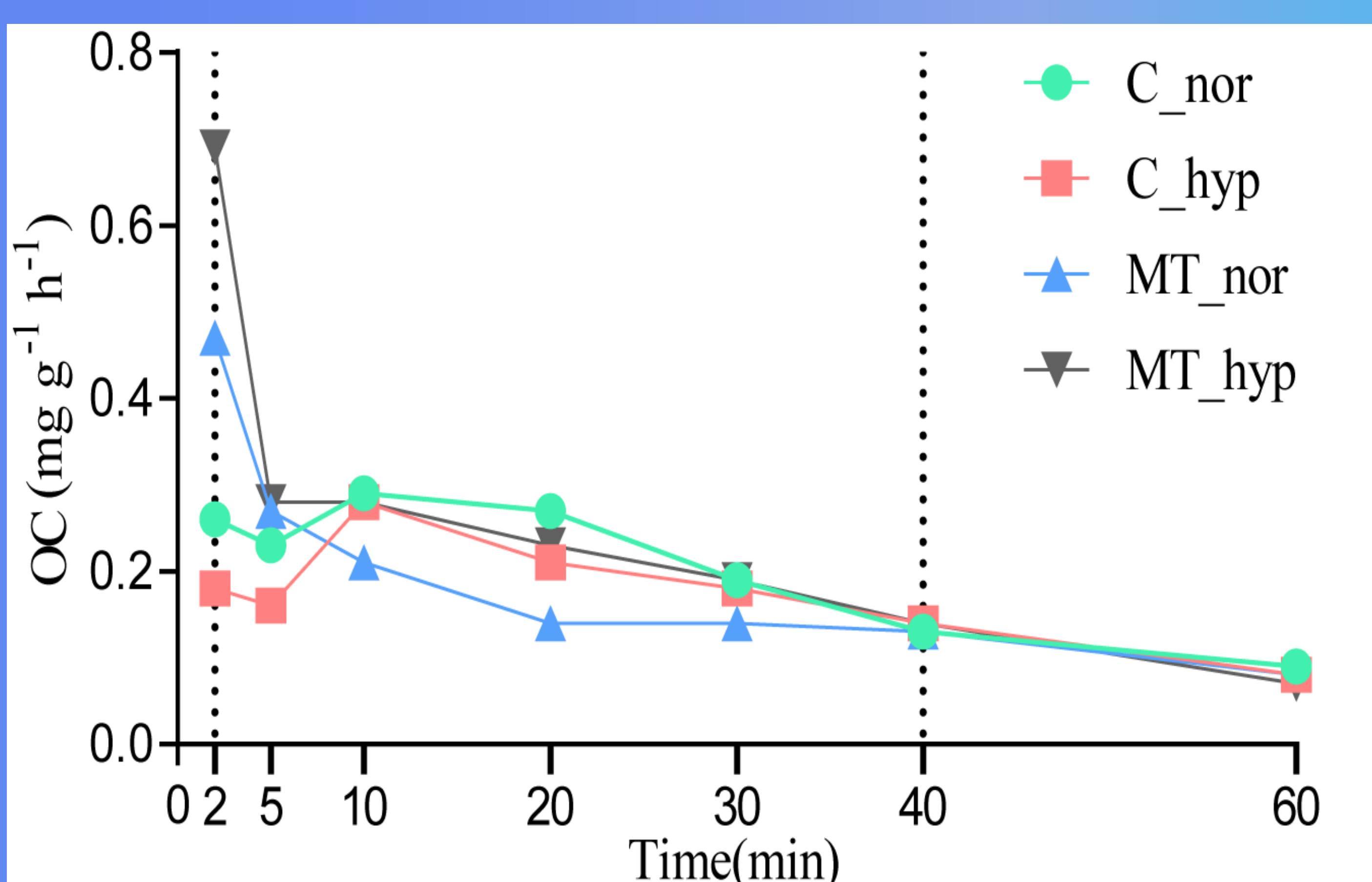
Results:

Histological examination showed predominantly regressive changes in the gills of crab exposed to hypoxia. The histoarchitecture of gills in the hypoxia group showed disrupted pillar cells (PC), the accumulation of hemocytes (HeM) in the hemocoelic space, lifting of lamellar epithelium and the appearance of bigger size of distal tips.

we observed the changes of oxygen consumption rate (OC) and the number times of opening-and-closing water inlet (OCWI) in each group within 1 hour after reoxygenation. We found that both MT+normoxia (MT_{nor}) and MT_{hyp} groups in oxygen consumption rate after reoxygenation obviously higher than that of C_{hyp} and C_{nor} group at 2 mins. The number times of OCWI in C_{hyp} and MT_{hyp} groups were significantly higher than that of C_{nor} and MT_{nor} groups ($p < 0.05$) after reoxygenation for 2 mins.



Oxygen consumption rate:



Conclusion:

In summary, the number times of OCWI be used as an index to evaluate hypoxia for *E. sinensis*. MT is demonstrated as an antioxidant not only related to the antioxidant ability, but also to the protective gill structure and regulation respiratory for *E. sinensis*.