

论著

## 钉螺在低温条件下耗氧量的观察

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摘要

目的 研究诱导钉螺“冬眠”的方法以及观察其“冬眠”现象的方法。方法 采集江苏省湖沼地区湖北钉螺指名亚种(*O. hupensishupensis*),在实验室模拟自然环境,逐步改变温度,诱导钉螺“冬眠”。用碘量法测定钉螺在不同低温下的耗氧量,用针刺及温水复苏法判断钉螺是否处于“冬眠”状态。结果 逐步降温法可诱导钉螺“冬眠”,以1℃/24h和1℃/48h的速率降温诱导钉螺“冬眠”,二者间无显著性差异。随着温度逐步降低,“冬眠”率逐渐增高,两者间存在明显的直线回归关系( $R^2=0.967, F=207.72, P<0.01$ ),其半数“冬眠”温度(ET50)为5.87℃(95%可信区间为:5.32~6.23℃)。钉螺的耗氧量随温度降低而减少,两者间存在直线回归关系( $R^2=0.963, F=182.18, P<0.01$ )。钉螺耗氧量与“冬眠”率间也有明显的直线回归关系( $R^2=0.916, F=75.88, P<0.01$ )。结论 采用逐步降温法,可较好地诱导钉螺“冬眠”。针刺及温水复苏法,可较简便、直观判断钉螺是否处于“冬眠”状态。

关键词 [钉螺](#) [冬眠](#) [诱导](#) [氧耗](#)

分类号

## Observation on the Amount of Oxygen Consumption by *Oncomelania hupensis* under Low Temperature

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Abstract

Objective To observe hibernation phenomena of *Oncomelania hupensis* and explore the way of inducing the hibernation in laboratory. Methods Snails, *O. hupensis hupensis*, were collected from marshland of Jiangsu. The snail hibernation was induced by the way of cultivation at a mimic natural environment in the laboratory with gradually changing temperature. The amount of oxygen consumed by snails was tested by iodine titration, and their hibernation was tested by pin puncture followed by warm water. Results There was no significant difference on the rate of snail hibernation when the temperature was reduced by 1 °C per 24 hrs and by 1 °C per 48 hrs. The hibernation rate increased with the decreasing temperature. There was a significant regression relationship between hibernation rate and temperature with  $R^2=0.967$  ( $F=207.72, P<0.01$ ). The temperature for 50% snails at hibernation (ET-50) was at 5.87 °C with 95% confidence limit of 5.32-6.23 °C. The amount of oxygen consumed by snails declined with reduced temperature, there was a significant regression relationship between oxygen consumption and temperature with  $R^2=0.963$  ( $F=182.18, P<0.01$ ). A significant regression relationship was also shown between oxygen consumption and hibernation rate ( $R^2=0.916, F=75.88, P<0.01$ ). Conclusion Snail hibernation can be induced by the way of gradually decreasing temperature, and pin puncture or warm water resuscitation can be used to determine the status of snail hibernation.

Key words [Oncomelania hupensis](#) [hibernation induction](#) [oxygen consumption](#)

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