

## 桑天牛产卵分泌物对其产卵刻槽含水量、pH值及微生物数量的影响

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Influence of oviposition secretion of *Apriona germari* Hope (Coleoptera: Cerambycidae) on water content, pH level and microbial quantity in its incisions on paper mulberry (*Broussonetia papyrifera*)

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**摘要** 为探讨桑天牛 *Apriona germari* 产卵分泌物对其产卵刻槽微生境的作用, 选用构树树干设置野外接虫和人工封槽两种处理, 取样测定和分析了桑天牛产卵分泌物对其产卵刻槽微生境含水量、pH值和微生物数量的影响。结果表明: 产卵4日内每日的人工封槽刻槽含水量均显著低于对照 ( $P < 0.05$ ), 4日后均高于对照, 产卵刻槽含水量的日变化与对照相似。产卵5日内, 人工封槽刻槽和产卵刻槽处树皮的pH值波动与对照基本一致, 5日后, 二者均高于对照, 但同日的人工封槽刻槽与产卵刻槽pH值无明显差异 ( $P > 0.05$ )。产卵刻槽、人工封槽刻槽与对照细菌数量比较如下: 产卵后第2日人工封槽刻槽显著高于对照和产卵刻槽 ( $P < 0.05$ ); 新制作与产卵后第1, 6, 7和8日人工封槽刻槽均达到极显著水平 ( $P < 0.01$ ); 第3日对照组的细菌数量 ( $1\ 320.0 \pm 189.0$ ) 极显著高于人工封槽刻槽和产卵刻槽 ( $P < 0.01$ ); 第4日人工封槽刻槽显著高于产卵刻槽 ( $P < 0.05$ ), 但与对照无显著差异 ( $P > 0.05$ ); 第5日三者差异不显著 ( $P > 0.05$ )。分析表明桑天牛产卵分泌物具有维持刻槽微生境含水量稳定的作用, 对刻槽处树皮pH值无明显影响, 对细菌数量的增加有一定抑制作用。

**关键词:** 桑天牛 产卵分泌物 产卵刻槽 含水量 pH值 细菌数量

**Abstract:** To study the effects of oviposition secretion on microenvironment of ovipositing incisions in *Apriona germari*, the influence of oviposition secretion on water content, pH level and microbial quantity was analyzed by artificial inoculation of paper mulberry (*Broussonetia papyrifera*) trunk caged in the field and imitated incisions. The results showed that the daily water content of the imitated incisions within 4 d after eggs being laid was significantly lower than that of CK ( $P < 0.05$ ), while the water content of the imitated incisions beyond 4 d after eggs being laid was higher than that of CK. The diurnal variation of water content in the ovipositing incisions was similar to that of CK. Within 5 d after eggs being laid, the diurnal variation of pH values of the barks with an ovipositing incision and the barks with an imitated incision was similar to that of common barks. Beyond 5 d after eggs being laid, the pH values of the barks with an ovipositing incision and that of the barks with an imitated incision were higher than those of common barks. But there was no obvious difference in pH value between the barks with an ovipositing incision and with an imitated incision at the same day after eggs being laid ( $P > 0.05$ ). The bacterial quantity of the barks was compared among imitated incisions, ovipositing incisions and CK. The results showed that at 2 d after eggs being laid, the bacterial quantity of the barks with an imitated incision was significantly ( $P < 0.05$ ) higher than that of the barks with an ovipositing incision or that of the common barks. At the day of eggs being laid and at 1, 6, 7, and 8 d after eggs being laid, the bacterial quantity of the barks with an imitated incision was extremely significantly ( $P < 0.01$ ) higher than that of the barks with an ovipositing incision or that of the common barks respectively. At 3 d after eggs being laid the bacterial quantity of the common barks ( $1\ 320.0 \pm 189.0$ ) was extremely significantly ( $P < 0.01$ ) higher than that of either the barks with an ovipositing incision or the barks with an imitated incision. At 4 d after eggs being laid, the bacterial quantity of the barks with an imitated incision was higher than that of the barks with an ovipositing incision ( $P < 0.05$ ). There was no significant difference in bacterial quantity between the every two of the three kinds of barks at 5 d after eggs being laid ( $P > 0.05$ ). These results suggest that at the prophase of embryonic development, the secretion has the ability of keeping water content of the ovipositing incisions to a certain extent, and does not influence the pH values of the barks containing an ovipositing incision, but the bacterial quantity in the ovipositing incision is inhibited by the secretion.

Key words: *Apriona germari* oviposition secretion ovipositing incision water content pH value bacterial quantity

收稿日期: 2010-07-09; 出版日期: 2011-04-20

基金资助:

国家自然科学基金项目(30271086, 30471399); 江苏省高校自然科学研究计划项目(04KJB180053)

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引用本文:

金凤, 嵇保中, 刘曙雯等. 桑天牛产卵分泌物对其产卵刻槽含水量、pH值及微生物数量的影响[J]. 昆虫学报, 2011, 54(4): 477-482.

JIN Feng, JI Bao-Zhong, LIU Shu-Wen et al. Influence of oviposition secretion of *Apriona germari* Hope (Coleoptera: Cerambycidae) on water content, pH level and microbial quantity in its incisions on paper mulberry (*Broussonetia papyrifera*) [J]. ACTA ENTOMOLOGICA SINICA, 2011, 54(4): 477-482.

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