魔芋生物碱的微胶囊化工艺及生防效果试验

Microencapsulations of konjac alkaloid and effect of biological prevention

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中文摘要：

为研究生物碱微胶囊及其生物防治效果，对魔芋生物碱进行提取分离，并以其为芯材，以海藻酸钠和魔芋胶为壁材，用锐孔-凝固法研究魔芋生物碱微胶囊的工艺条件。探讨了壁材组成、氯化钙浓度、固化时间及下滴速度和高度对微胶囊效果的影响。结果表明，飞粉与乙醇配比以1∶3，常温下机械桨叶高速搅拌48 h为佳。干柱层析时以甲醇为展开剂，且展开剂与被展开溶液之间配比以3 mL∶3 mL效果最好。正交试验结果表明，海藻酸钠和魔芋胶的最佳配比为10∶1，氯化钙浓度为0.25 mol/L，固化最佳时间为10 min，下滴速度和高度分别以120～180滴/min和10～15 cm为宜；将所制得的生物碱微胶囊经过虫效的生防试验，探讨其引诱和忌避的效果。

英文摘要：

In order to study the organism of prevention and cure effect, microencapsulated alkaloid and bio-pesticide sustained-release agent were made. The composition of particle wall, concentration of calcium chloride, time of solidification, impact of drop speed and height were studied to examine their microcapsulation effects. Konjac alkaloid was extracted and isolated as the core material and sodium alginate with konjac gum was used as the principal wall material. Then they were investigated by means of piercing method. It was found that the konjac light-flour and alcohol ratio of 1∶3, and mixing them at high speed for 48 h at room temperature could reach the best result. In the Dry Alumina Column Chromatography(DACH), we used methanol as dispersing agent. The optimum ratio of the dispersing vs. dispersed agent was determined to be 3 mL∶3 mL. The results of orthogonal experiment indicated that the optimum ratio of sodium alginate to konjac gum was 10∶1; the calcium chloride concentration was 0.25 mol/L; solidification time was 10 min; and the drop speed and height were 120～180 drop/min and 10～15 cm, respectively. The microencapsulated konjac alkaloid was applied to an insecticidal experiment to study its allurement and expellant effect.

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