DEODORIZATION OF SWINE MANURE USING A Lactobacillus STRAIN

Zhiying Yan1,2, Jiang Li1,2, Xiaofeng Liu1,2, Yuexiang Yuan1,2, Yinzhang Liao1,2, Xudong Li1,2*

1Chengdu Institute of Biology, Chinese Academy of Sciences, Chengdu 610041, PR China
2Key Laboratory of Environmental and Applied Microbiology, Chengdu Institute of Biology, Chinese Academy of Sciences, Chengdu 610041, PR China

Abstract

One of the environmental problems caused by the large-scale livestock industry in China is odor pollution. Using the microbial strains with high deodorization efficiency is a feasible strategy to handle this problem. In this study, a Lactobacillus strain A2 with high efficient deodorization was isolated. To find the optimal deodorization conditions of strain A2, the deodorization efficiencies at different temperatures and inoculation quantities were tested. Our result showed that suitable temperatures (30℃) and cost-effective inoculation quantity (3%) should be chosen for better growing and high efficient deodorization of strain A2. To further evaluate the deodorization efficiency of strain A2 in practical application and exploring its deodorization mechanism, a scale-up experiment was conducted. Accordingly, strain A2 exhibited high and stable deodorization efficacy of reducing more than 30% NH₃, H₂S and odor intensity and 40% TVOC (except on day 6 and 12) in 36 days’ treatment. In addition, after the manure was incubated with strain A2, the concentrations of VFAs, indole and skatole were decreased and N and S were transformed to their less volatile forms, which would contribute to odor reduction from swine manure.

Keywords: deodorization, Lactobacillus strain, livestock manure, odor components, odor intensity

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* Author to whom all correspondence should be addressed: e-mail: yanzy@cib.ac.cn; Phone: +86-28-8522-9904; Fax: +86-28-8522-9904