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DEODORIZATION OF SWINE MANURE USING A *Lactobacillus* STRAIN

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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°C) 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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