山东科学 2011, 24(2) 35-40 DOI: ISSN: 1002-4026 CN: 37-1188/N

目录

两组纤维素分解菌复合系MC-A1和MC-N1的筛选及其协同功能初探

张瑞清, 袁堂玉, 孙燕霞, 刘克宁

山东省烟台市农业科学研究院，山东 烟台 265500

摘要：

采用连续传代方法分别从自制堆肥和几种自然发酵基质中筛选出纤维素分解能力较强的两组混合菌复合系MC-A1 和MC-N1，前者是通过高温摇瓶发酵定期传代获得的耐高温好氧性的纤维素分解菌群，后者则是通过高温静止培养定期传代获得的耐高温兼氧性的纤维素分解菌群，这两组纤维素分解菌复合系在96 h内对天然纤维素材料麦秆粉的分解率分别达到42%和38%，分解速度最快时期均发生在48~96 h内，96 h以后麦秆粉分解率迅速减缓。麦秆粉发酵培养液先接种好氧性纤维素分解菌复合系MC-A1摇瓶发酵96 h，再接种兼氧性纤维素分解菌复合系MC-N1静止培养 96 h ，麦秆粉的分解效率可以提高到47%，说明这两组纤维素分解菌复合系在非天然纤维素分解过程中发挥协同作用。

关键词： 纤维素分解 复合系 高温 好氧 兼氧 协同功能

Selection and cooperative functionality of two groups of cellulose degrading microbial communities MC-1 and MC-1 with different degradation effects

ZHANG Rui-Qing, YUAN Tang-Yu, SUN Yan-Xia, LIU Ke-Ning

Yantai Academy of Agricultural Sciences, Yantai 265500, China

Abstract:

We screen two groups of composite microbial systems, MC-A1 and MC-N1, with stronger cellulose degrading capabilities from homemade compost heap and several natural fermentation materials by regular regeneration during incubation. MC-A1 is a composite thermophilic aerobic cellulolytic microbial community which is acquired by a subculture technique of shake flask fermentation broth, while MC-N1 is another composite microbial community with thermophilic anaerobic cellulolytic capability which is obtained by static cultivation and regular regeneration. It is discovered that the degradation rates of communities MC-A1 and MC-N1 for wheat straw powder can reach 42% and 38% within 96 h. Their quickest degradation rates occur between 48 h and 96 h, but these rates steeply decline after 96 h.This degradation rate can reach 47% by incubation of MC-A1 through 96 h shake flask fermentation and then incubation of MC-N1 through 96 h static cultivation. This demonstrates that these two cellulolytic microbial communities show cooperative function in the course of the degradation of non natural cellulose.

Keywords:

收稿日期 2010-08-18 **修回日期** **网络版发布日期**

DOI:

基金项目:

烟台市科学技术发展计划项目（2007128）

通讯作者: 张瑞清（1977-），女，博士，主要从事城镇生活垃圾，农业生态管理及农业微生物育种研究

作者简介: 张瑞清（1977-），女，博士，主要从事城镇生活垃圾，农业生态管理及农业微生物育种研究

作者Email: zrqnancy@sohu.com

参考文献：

本刊中的类似文章