

## LAB170

### Nagqu 4580 对睡眠改善作用的研究

李玲<sup>1</sup> 杨玲<sup>1</sup> 路江浩<sup>1</sup> 鄢梦洁<sup>1</sup> 张彦位<sup>1</sup> 刘明月<sup>1</sup> 贾晓蒙<sup>1</sup> 赵林森<sup>1</sup> 何方<sup>2</sup>

<sup>1</sup>河北一然生物科技有限公司 石家庄 050000

<sup>2</sup>四川大学华西公共卫生学院 成都 610000

**摘要** 中国睡眠研究会公布的调查结果显示, 中国成年人失眠发生率高达 38.2%, 这意味着超 3 亿国人患有睡眠障碍。Nagqu 4580 是经瑞士乳杆菌 L551、副干酪乳杆菌 L578、嗜热链球菌 S709 三菌株长时发酵后制得的一类后生元助睡眠产品。超高效液相色谱仪检测分析后得知, Nagqu 4580 代谢产物多达上百种。其中包括神经递质类物质, 如 GABA, 抗氧化物质, 如谷氨酰胺、脯氨酸、甜菜碱等; 其它物质, 如乙酸、丁酸等短链脂肪酸及各种维生素类。这些成分在神经调节过程中发挥着重要的作用。Nagqu 4580 可能通过肠道菌群及代谢产物 - 肠 - 脑轴的互动, 进而影响免疫、神经内分泌来起到调节神经的作用, 从而改善睡眠。本试验旨在用 Nagqu 4580 产品干预患有睡眠障碍的人群, 通过匹斯堡睡眠指数量表 (PSQI) 和睡眠改善症状统计量表, 研究 Nagqu 4580 对睡眠的改善作用, 并用同等剂量的 GABA 作为对照 (每组 50 人)。结果表明: 经 2 周的干预, Nagqu 4580 组和 GABA 组对 PSQI 和睡眠症状都有显著改善, 其中 Nagqu 4580 组 PSQI 评分第 1 周下降了 34.6%, 第 2 周下降了 42.0%; GABA 组第 1 周下降了 16.0%, 第 2 周下降了 22.2%。在睡眠症状改善方面, 如入睡时间、半夜醒来的次数及是否能很快入睡、睡眠时长, 都说表明了 Nagqu 4580 的干预效果优于同等剂量的 GABA。

**关键词** Nagqu 4580 睡眠障碍 GABA

### Study on the Effect of Nagqu 4580 on Sleep Improvement

Ling Li<sup>1</sup> Ling Yang<sup>1</sup> Jianghao Lu<sup>1</sup> Mengjie Yan<sup>1</sup> Yanwei Zhang<sup>1</sup> Mingyue Liu<sup>1</sup> Xiaomeng Jia<sup>1</sup>

Linsen Zhao<sup>1</sup> Fang He<sup>2</sup>

<sup>1</sup>Hebei Inatural Bio-Tech Co. Ltd., Shijiazhuang 050000

<sup>2</sup>West China School of Public Health, Sichuan University, Chengdu 610000

**Abstract** The incidence of insomnia among Chinese adults is as high as 38.2 percent, which means more than 300 million Chinese suffer from sleep disorders, according to a survey released by the China Sleep Research Society. Nagqu 4580 is a kind of sleep aid product of microflora and metabolites which prepared by the fermentation of three strains of *Lactobacillus* Swiss L551, *Lactobacillus paracasei* L578 and *Streptococcus thermophilus* S709. Ultra-performance liquid chromatograph detection and analysis that Nagqu 4580 metabolites up to hundreds of kinds. They include neurotransmitters such as GABA and antioxidants such as glutamine, proline and betaine. Other substances, such as acetic acid, butyric acid and other short chain fatty acids and various vitamins. These components play an important role in neuroregulation. Nagqu 4580 may affect immune and neuroendocrine regulation through the interaction of intestinal flora and metabolites - gut - brain axis, thereby improving sleep. The aim of this study was to use Nagqu 4580 product to intervene with people with sleep disorders, and to study the effect of Nagqu 4580 on sleep improvement by Pittsburgh Sleep Index Scale (PSQI) and Sleep Improvement Symptomatic Statistical Scale, and to use the same dose of GABA as a control (Each group of 50 people). The

results showed that after 2 weeks of intervention, the PSQI and sleep symptoms were significantly improved in the Nagqu 4580 group and the GABA group. The PSQI score in the Nagqu 4580 group decreased 34.6% in the first week and 42.0% in the second week. The decrease in the GABA group was 16.0% at week 1 and 22.2% at week 2. In terms of the improvement of sleep symptoms, such as the time to fall asleep, the number of times waking in the middle of the night, and the ability to fall asleep quickly and the length of sleep, the intervention effect of Nagqu 4580 was superior to that of the same dose of GABA.

**Key words** Nagqu 4580 Sleep disorders GABA

## LAB171

### 乳酸杆菌和双歧杆菌对扩展青霉的抑制活性比较及潜在的抗真菌代谢物分析

李邈宇 于雷雷 田丰伟 赵建新 张灏 翟齐啸 陈卫  
(江南大学食品学院 江苏无锡 214122)

**摘要** 扩展青霉 (*P. expansum*) 感染水果不仅会造成经济损失, 而且还可能危害人类健康, 尤其是因为针对这种真菌的生物防治剂很少有人进行过深入研究。为了验证 22 种双歧杆菌和 44 株乳酸杆菌对扩展青霉的抗真菌活性, 先后进行了双重培养覆盖试验, 微量滴定板孔试验和琼脂斑点试验。青春双歧杆菌 (*B. adolescentis*) 在所有测试菌株中, CCFM1108 表现出最强的抑制能力。此外, 我们表明, 由测试菌株产生的多种抗真菌化合物可协同抑制扩展青霉的生长, 包括乳酸, 乙酸, 3-苯基乳酸和对羟基苯基乳酸。在无细胞上清液中检测到提到的那些活性化合物, 并使用 GC-MS 通过代谢组学分析对其进行了表征。相应地, CCFM1108 上清液破坏质膜完整性扩展青霉菌丝体和急剧减少扩展青霉中棒曲霉素的产生。双歧杆菌菌株, 尤其是青春双歧杆菌 CCFM1108 的活性抑制特性表明, 青春双歧杆菌可潜在地用作预防或延缓果实上真菌变质的新型生物制剂。

**关键词** 扩展青霉 乳酸菌 双歧杆菌 代谢组分析

### A Comparison of the Inhibitory Activities of *Lactobacillus* and *Bifidobacterium* against *Penicillium expansum* and an Analysis of Potential Antifungal Metabolites

Miaoyu Li Leilei Yu Fengwei Tian Jianxin Zhao Hao Zhang Qixiao Zhai Wei Chen  
(School of Food Science and Technology, Jiangnan University, Wuxi 214122, Jiangsu)

**Abstract** The infection of fruits by *Penicillium expansum* (*P. expansum*) do not only cause economic loss but also potentially endanger human health, especially because few biocontrol agents against this fungus have been well studied yet. In this work, to verify the antifungal activity against *P. expansum* of 22 *Bifidobacterium* and 44 *Lactobacillus*, dual-culture overlay assay, microtiter plate well assay and agar spot assay were successively performed. One of the strain, *Bifidobacterium adolescentis* (*B. adolescentis*) CCFM1108