



显性低酚棉新品系种仁营养品质与利用评价

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Analysis for Nutrient Quality and Utilization Appraisal of the Kernel from New Upland Cotton Strains with Dominant Low Gossypol Character

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摘要

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摘要 以自主选育的7个显性无腺体新品系为材料, 通过种子性状考察, 种仁游离棉酚、脂肪酸和氨基酸含量测定, 研究了低酚棉种仁具有重要的油用、食用价值和保健功能。结果表明: 4个新品系种仁棉酚含量低于国家食用标准, 其中苏显无154、苏显无156棉酚占种仁质量低于3 mg · kg⁻¹, 成为名副其实的无酚棉新种质。低酚新品系种仁粗脂肪含量高于有酚品种, 不饱和脂肪酸总含量超过70%, 油酸相对含量略低于有酚品种, 亚油酸、亚麻酸、棕榈油酸相对含量以及不饱和脂肪酸总含量与有酚品种相同。低酚新品系种仁色氨酸含量高于常规有酚品种, 其它必需氨基酸含量以及氨基酸总含量与有酚品种相近。低酚基因Gl₂^e对棉花种仁脂肪酸、氨基酸组成及其含量未产生负效应。

关键词: 棉花 显性低酚 种仁 脂肪酸 氨基酸

Abstract: In order to clarify the oil, edible value and healthy functions of kernels from new low-gossypol strains, seven new dominant glandless strains and two gossypol cultivars from upland cotton, Sumian 22 and Sikang 1, were selected to determine content of free gossypol, fatty acids, amino acids in kernels, and other characters. The results showed that the gossypol content of the kernels of four new strains were under the national edible standard (200 mg · kg⁻¹). Suxianwu 154 and Suxianwu 156 are new upland cotton lines without gossypol. The rough fat content of kernels from new low-gossypol strains were higher than that from gossypol cultivars, and the total content of unsaturated fatty acids from low gossypol kernels was more than 70%. The relative amounts of linoleic acid, linolenic acid, palm oleic acid, and total unsaturated fatty acids from low gossypol kernels were the same as that from gossypol ones, whereas the relative amounts of oleic acid from low gossypol kernels were slightly lower than that from gossypol ones. Tryptophan content of low gossypol kernels was significantly higher than that of conventional gossypol kernels, and the content of other essential amino acids as well as the total content of amino acids from low gossypol kernels were the same as that from gossypol ones. There were no adverse influences of the glandless gene Gl₂^e on the composition and content of fatty acids and amino acids in low gossypol kernels.

Keywords: cotton dominant low gossypol kernel fatty acids amino acids

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