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[1]麻浩,张雪丹,王显生,等.具不同脂肪氧合酶同工酶的大豆种子提取液漂白β-胡萝卜素的能力差异[J].大豆科学,2010,29(04):681-687.[doi:10.11861/j.issn.1000-9841.2010.04.0681]
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具不同脂肪氧合酶同工酶的大豆种子提取液漂白β-胡萝卜素的能力差异

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摘要: 大豆种子中含有3种脂肪氧合酶同工酶(Lox1、Lox2和Lox3)。以含有不同脂肪氧合酶同工酶大豆品系种子为材料,揭示不同提取和反应条件下,不同品系Lox提取液漂白β-胡萝卜素的特性差异。结果表明:Lox1,Lox2,Lox3,Lox1,2和Lox1,2,3的最适提取液是Tris-HCl缓冲液(pH 6.8),而Lox1,3和Lox2,3的最适提取液是磷酸缓冲液(pH 6.0)。完全漂白β-胡萝卜素所需反应时间长短顺序是Lox1,2,3,Lox3>Lox2,3,Lox1,3>Lox1,Lox2>Lox1,2;在最适反应温度条件下,Lox提取液的漂白能力大小顺序是Lox1,3>Lox1,2,3,Lox2,3>Lox3>Lox1,2,Lox1>Lox2,而在最适pH条件下,Lox提取液的漂白能力大小顺序是Lox1,3,Lox2,3>Lox1,2,3>Lox1,2>Lox2>Lox3>Lox1。随着Lox提取液的放置时间延长,其漂白能力下降。含有Lox3的品系提取液(也就是Lox1,3,Lox2,3和Lox1,2,3的提取液)比不含Lox3或仅含单一同工酶品系的提取液具有更好的漂白能力,说明Lox3是获得高效漂白能力必不可少的同工酶。

Abstract: β-carotene bleaching activity of Lox extracts from soybeans containing various Lox isoenzyme combinations was investigated under different extraction and reaction conditions. Results indicated that the optimum extracting solution for Lox1, Lox2, Lox3, Lox1,2, and Lox1,2,3 was Tris-HCl buffer (pH 6.8), while for Lox1,3 and Lox2,3, was sodium phosphate buffer (pH 6.0). The reaction time needed for extracts to bleach β-carotene completely was in the order of Lox1,2,3, Lox3>Lox2,3, Lox1,3>Lox1,Lox2>Lox1,2. At their corresponding optimum reaction temperatures, the bleaching levels of extracts was in the order of Lox1,3>Lox1,2,3, Lox2,3>Lox3>Lox1,2, Lox1>Lox2, while at their corresponding optimum pH values in the order of Lox1,3, Lox2,3>Lox1,2,3>Lox1,2>Lox2>Lox3>Lox1. With the laying time prolonged, the bleaching activity of extracts tended to decrease. Lox3 was indispensable for higher efficiency of β-carotene bleaching. The extracts of the isoenzyme combinations containing Lox3 (Lox1,3, Lox2,3, and Lox1,2,3) were found to have stronger bleaching activity than those without Lox3 or of single isoenzyme.

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