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摘要: 蛋白质组分改良是国内外大豆蛋白质品质育种的研究热点之一。大豆种子贮藏蛋白主要包括11S球蛋白和7S-β伴大豆球蛋白,它们也是大豆蛋白营养价值和功能特性的决定组分。利用我国自然突变产生的亚基缺失体材料通过聚合育种,并经聚丙烯酰胺凝胶电泳法(SDS-PAGE)分析鉴定表明:已获得A₃α'亚基缺失、只含有β亚基、只含有α+β亚基、只含有α'+β亚基、只含有7S亚基和A₅A₃B₃亚基缺失、A₂A₁A₁₀含量极低、B₁B₁₀B₂含量极低等系列单缺、双缺、多缺的贮藏蛋白亚基组成类型新种质,其中A₃α'亚基缺失、只含有α+β亚基、只含有7S亚基3种种质均能正常生长、结实,并稳定遗传;只含7S亚基类型大豆种子贮藏蛋白的7S组分总量含量最高;A₃α'亚基缺失类型大豆种子贮藏蛋白11S组分总量最高;在11S+7S组分总量上由高到低依次是A₃α'亚基缺失类型>只含7S亚基类型>只含α+β亚基类型,11S/7S比值的变异范围在0.14~1.27。三种类型种质完熟期基本在105~111 d;百粒重基本一致;A₃α'亚基缺失类型大豆单株产量最高平均为55.12 g;只含α+β亚基类型脂肪总量最低为57.6%,蛋白质含量由高到低依次为只含7S亚基类型、A₃α'亚基缺失类型、只含α+β亚基类型,脂肪含量由高到低依次为:只含α+β亚基类型、只含7S亚基类型、A₃α'亚基缺失类型。

Abstract: Improvement of protein components is one of the hotspots in the protein quality breeding of soybean. Soybean seed storage proteins mainly consist of 11S globulin and 7Sβ-conglycinin. They determine the nutritional value and functional properties of soy proteins. In the present study, natural mutants of subunit deficiency were used through pyramiding breeding to produce new deficiency types. After screening with polyacrylamide gel electrophoresis (SDS-PAGE), lines lacking A₃α' subunits, lines only containing β subunit, lines only containing α+β subunits, lines only containing α'+β subunits, lines only containing 7S subunits, lines lacking A₅A₃B₃ subunits, lines with the lower level of A₂A₁A₁₀ subunit and lines with the lower level of B₁B₁₀B₂ subunit, etc, were obtained. The lines lacking A₃α' subunits, containing only α'+β subunits, and containing 7S subunits could normally grow and develop as well as were stably inherited. The lines containing only 7S subunits had the highest amount of total 7S while the lines lacking A₃α' subunits possessed the highest level of 11S. The variation range for the 11S/7S ratio in the three new types was between 0.14 and 1.27, while their growth period was between 105 and 111 d. All the three new types had almost the same hundred-grain weight. The lines lack of A₃α' subunits had the highest yield per plant of 55.12 g. The lines containing only α+β subunits had the lowest amount of protein and oil (57.6%). The order of protein contents of the lines were as follows: lines containing 7S subunits>lines lacking A₃α' subunits>lines containing only α+β subunits. The order of fat content was as follows: lines containing only α+β subunits>lines containing only 7S subunits>lines lacking A₃α' subunits.

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