IN VITRO REGENERATION OF SUNFLOWER, HELIANTHUS ANNUUS L., PLANTS FROM IMMATURE EMBRYOS

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Globular (0.2mm long) to torpedo (1.2mm long with cotyledons) sunflower embryos, four days of age, were cultured on a Marashige and Skoog (1962) salt solution complemented with 10 mg/l of thiamine, 1 mg/l of pyridoxine and nicotinic acid, 100 mg/l of inositol, 30 g/l of sucrose (MS) and one of several hormone combinations containing 0 to 5 mg/l of naphtalene acetic acid /NAA) and from 0 to 1 mg/l of benzyladenine /BA). All media were solidified with 8 mg/l agar. Plants from five public lines (RHA 297, RHA 299, HA 300, HA 99 and CM 400) and two hybrid varieties (HY 894 and HY 903) were used as sources of embryos. Data were collected for four weeks at weekly intervals on numbers of embryos that formed callus, choots or callus which developed shoots. Linear and quadratic regressions of percent callus and shoots produced were calculated in respect to NAA and BA contents in culture media for each genotype. Optimal concentrations of NAA and BA were estimated to 0.1 mg/l and 0.5 mg/l for callus production and to 0.1 mg/l and 0.1 mg/l for shoot development from callus. Screening of about seventy five genotypes revealed a broad range of abilities to regenerate plants from globular to torpedo embryos grown on three MS media. Genotypes with 70% or more of the planted embryos regenerating shoots or callus were identified. Significant differences among genotypes and media existed for callus and shoot formation from immature embryos. However, it was possible to regenerate plants from 80% of the sunflower genotypes using this technique. Most regenerated shoots rooted on MS medium without hormone and developed into flowering adult plants after transfer to a greenhouse.