Abstract. The paper disk method of screening several plant growth regulators was evaluated. Leaf explants of Vigna unguiculata (L) Walp. were placed on solidified Murashige and Skoog's minimal organics medium containing 0.5 mg/l nicotinic acid. Hormones were tested, singly and in combinations, on paper disks in large Petri plates (150 × 20 mm). Hormones tested were 2,4-D (2,4-dichlorophenoxyacetic acid), 2,4,5-T (2,4,5-trichlorophenoxyacetic acid), IAA (indole-3-acetic acid), IBA (indole-3-butyric acid), picloram (4-amino-3,5,6-trichloropicolinic acid), dicamba (3,6-dichloro-2-methoxybenzoic acid), BA (6-benzyladenine), 2iP (2-isopentenyl adenine), and kinetin [6-(furfurylamino)-purine]. Root formation was stimulated by IAA and IBA; dicamba, picloram, 2,4-D, and 2,4,5-T stimulated callus formation. All cytokinins tested suppressed root formation. Dicamba in combination with either 2iP or kinetin induced the greatest callus formation. Root formation was optimal with kinetin and either IAA or IBA. The disk method provided a rapid, nonquantitative evaluation of callus and root formation from leaf disks.

The disk method was originally devised to test microbial susceptibility to antibiotics (Barry et al. 1970, Bauer et al. 1966). In this method a disk carrying a specific drug concentration is placed on the surface of a solidified medium inoculated with viable cells. As the drug diffuses out from the disk, an inhibition zone forms which is related to toxicity and sensitivity of the organism (Cooper 1963). The method has been used with yeast (Saubolle and Howprich 1978), algae (Wright 1975), and higher plant cells (Strauss and King 1984, Strauss et al. 1984). Both inhibition (Strauss and King 1984) and exhibition zones (Strauss et al. 1984) have been observed with plant cells.

In vitro culture of plant tissue and cells may require testing of several growth hormones (auxins, cytokinins, etc.) in various combinations and concentra-
tions. This is especially true if a new species or variety is to be cultured. The growth hormone diffuses from the disk through the medium as a function of time and establishes a concentration gradient. The disk method is rapid and provides good, qualitative indications of the tissue response. The objective of this study was to examine the application of the disk method for evaluating qualitative growth regulator responses; that is, morphological and growth behavior.

Materials and Methods

Plant Material

Seeds of *Vigna unguiculata* L. var. Magnolia Blackeye were planted in plastic or clay pots containing potting soil (5 seeds per pot) and placed in a growth room (27 ± 3°C). The first true, fully expanded leaf from 11-day-old plants was excised. The surface was then sterilized by immersion in 70% ethanol for 5 min, followed by 20% Clorox with 1 to 2 drops of Tween 20 for 5 min. Leaves were then rinsed twice in sterile distilled water. Explants (9.0 mm) were cut with a cork borer and placed on the surface of the solidified medium.