

BIOSYNTHESIS OF AUXINS BY AZOTOBACTER

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ABSTRACT

Various *Azotobacter* cultures were isolated from the rhizosphere of maize. Ten fast growing cultures were selected (numbered as Z₁, Z₂,Z₁₀), and evaluated for their potential to produce auxins (IAA-equivalents) in vitro both in the absence and presence of auxin precursor, L-tryptophan (L-TRP). *Azotobacter* cultures varied in their auxin producing ability and Z₄ was the most efficient auxin (3.1 µg IAA-equivalents mL⁻¹) producer in the absence of L-TRP. Supplementation of the medium with L-TRP @ 10⁻³ and 10⁻⁴M stimulated auxin production by almost 2-fold over the unamended control. Various environmental factors strongly affected L-TRP-dependent auxin biosynthesis in soil, and optimal productions were found at 6.0 mg L-TRP g⁻¹ soil, 6.0 mg glucose g⁻¹ soil, pH7.0, 40 °C temperature, shaking @ of 150 rpm, no nitrogen and 48 hours of incubation. Application of antibiotics (streptomycin or erythromycin) had inhibitory effects on auxin biosynthesis in soil.