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Poster Communication Abstract - 1.66

CHARACTERIZATION OF MAIZE ROOT CULTURE FOR THE PRODUCTION OF NUTRACEUTICAL COMPOUNDS

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Anthocyanins are an important group of water-soluble pigments present in most vascular plants, belonging to flavonoids, major group of plant secondary metabolites. They are responsible for tissue pigmentation such as orange, red, purple and blue of most flowers, fruits, seeds and other vegetative tissues, thereby enhancing their chances of successful pollination and seed dispersal. These colouring pigments protect plants from harmful UV radiation, act as antioxidants to combat oxidative stress, against environmental stress, and defend respond to pathogens and In recent years, anthocyanins have acquired great interest herbivores. thanks to their bioactive properties. Indeed, several studies have linked these compounds with an important role in human health due to their antioxidant and anti-inflammatory properties, effects on cardiovascular anticancer characteristics. Among plants, pigmented health and maize varieties are particularly rich in anthocyanins, with an average content much higher than that found in other plants such as blueberries. chokeberry, and strawberry, known to be particularly rich in these secondary metabolites. For this reason, because of their healthy properties, several researches are focusing on generating new-pigmented maize varieties that are suitable for cultivation and useful for the production of healthy foods. An alternative approach for anthocyanin production is based on the use of in vitro tissue cultures. Indeed, this together with biotechnological approaches, makes strategy, possible a sustainable agricultural development, ensuring solutions to important food safety issues. In this study, in vitro root tissue cultures were developed, several factors evaluating the effect of (concentration of arowth regulators, sucrose, presence/absence of light and genotype) on anthocyanin production and accumulation. Surprisingly, when compared to cob tissue,

which is considered one of the most anthocyanin-rich maize tissues, the total content of anthocyanins in roots is more than doubled (19.58 mg/g vs 8.61 mg/g respectively). Results obtained are encouraging and highlight the possibility of using this tissue as starting material for the production of these bioactive compounds. Moreover, the application of *in vitro* technologies, offers several advantages compared to conventional plant cultivation methods, overcoming limitations due to plant growing slowness, season dependency and contaminations.

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