Chapter

7

APPLICATION OF NANOPARTICLES IN PLANT TISSUE CULTURE

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INTRODUCTION TO PLANT TISSUE CULTURE

Several biotechnological methods can be applied to plants in plant breeding and cultivation. One of the broadest applications of biotechnology is in the area of plant tissue culture. Currently, there are many different applications of plant tissue culture and it covers much more than clonal micropropagation. Somatic embryogenesis, organogenesis, somatic hybridization, meristem culture, embryo rescue, virus elimination, haploid plant production, production of secondary metabolites, and application of bioreactors in mass production can include plant tissue culture techniques (Dönmez et al., 2016). Many different applications are used to increase success according to the technique used in plant tissue culture studies. In recent years, nanotechnology applications, which have rapidly entered various areas of our lives, have also started to take place in plant tissue culture studies.

Nanotechnology refers to the technology applied at the nanoscale. Nowadays it also represents a mega trend and has become a general-purpose technology (Bhushan, 2017). It is a multidisciplinary field covering a wide range of technological fields such as nanotechnology, physics, chemistry, biology, medicine, pharmacy and various engineering. Nanotechnology is considered a common technology affecting various industries in the economy and includes several technologies commonly used on the nanometer scale. Therefore, nanotechnology has the potential to benefit many research and application areas (Asgari-Targhi et al., 2018). Plant tissue culture is one of this area and rapidly growing.

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