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Comparative Study of Novel Low Cost Culture Media "Kfa and Kfa Plus" for Micropropagation of Mentha Sps

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Abstract A low cost novel plant tissue culture medium "KFA and KFA plus" (Patented) has been developed using "Flyash" as the main source of inorganic constituent in the medium. It has been used in various combinations with and without nitrogen source, and plant growth regulators. To study the efficacy of this media varying percentage (5%, 7%, and 10%) of flyash was used for micropropagation of *Mentha arvensis* and *M. spicata*. Growth of the plants in KFA and KFA+ medium was compared with the most widely used Murashige and Skoog's (MS) medium (control). After standardization all media were supplemented with PGRs IAA (0.50mg/l) + BAP (1.00mg/l). Comparisons were done on the basis of % bud break, % shooting and average shoots/explants. Efficient results were obtained, showing healthy, normal growth similar to control (MS medium) of *Mentha arvensis, Mentha spicata* grown in KFA and KFA plus cultures. The percent shooting was similar in both media (MS control) and KFA, KFA plus. 83.3% shooting and an average of 1.27 shoots/explants were observed in fly ash grown culture. The efficacy on the basis of % shooting and shoots/explants were found to be better in 7% and 10% in case of *M. arvensis* whereas 5% in case of *M. spicata*. An average of 4555 shoots was obtained in *M. arvensis* and 2596 shoots in *M. spicata* after three subsequent subculturing. Hundred percent rooting was achieved in media containing IBA (1.0mg/l) + BAP (0.5mg/l). 100% survivability was achieved when these rooted plants were transplanted into pots. Genetic homogeneity of the in vitro generated plants was ascertained by DNA profiling. Fly ash in the KFA and KFA plus culture medium resolves our aim of low cost plant production and also the disposal problem of the thermal power plant waste (FA) up to a large extent.

Keywords: Novel medium, Flyash, Plant tissue culture, *Mentha*, KFA and KFA plus, micropropagation, Genetic homogeneity.