Advances in Crop Science and Technology
ISSN: 2329-8863
2020
Vol.8 No.5

Screening the extraction performance of aprotic polar and non-polar solvents on the proportional variances of saturated fatty acids in cassava cell cultures and their cytotoxicity assessment

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Abstract

Cassava plant is one of the major economical crops, involved in lots of industrial applications and therapeutic purposes as suppression of cancer cells activity. Present work targeted to assess saturated fatty acids and their derivatives in cassava cell cultures. The extraction adequacy of aprotic polar (ethylacetate) and non-polar (chloroform, n-hexane) solvents was evaluated. Stem explants of *in vitro* growing plantlets were induced calli on MS-medium+1mg/l NAA+0.5mg/l BA. Medium containing 5 mg/l 2.4-D and 0.2 mg/l BA was selected for callus productivity.Chloroform callus extract contained mostly fatty acid methyl esters (FAMEs) and fatty acid propyl esters (FAPEs). In contrast n-hexane extract contained higher amounts of fatty acid constituents in free form such as palmitic acid (23.55%). However ethylacetate extract included the highest value of lauric acid (28.34%) in free form as well other fatty acids such as caprylic acid (14.525%), capric acid (2.53%) and enanthic acid (6.41%). Ethylacetate extract conferred the optimal efficiency to suppress the breast cancer cells prevalence (2.63 ug IC50), followed by hexanoic extract (3.44 ug IC50) then chloroformic extract (6 ug IC50) recording the least value for cancer cells propagation. In conclusion, stem calli of cassava plantlets possess essential saturated fatty acids for considerable effectiveness against breast cancer prevalence. For callus induction, stem explants of *in vitro* growing plantlets were cultured on MS-medium supplemented with 1mg/l NAA+0.5mg/l BA. Stem derived calli were sub-cultured on MS-medium contained 8 mg/l 2,4-D for callus production. Using 5 mg/l 2.4-D + 0.2 mg/l BA visually observed to be the best treatment in callus proliferation after 30 days of cultivation.

Biography:

Nermeen M. Arafa has been completed PhD thesis at the age of 33 years from Biochemistry Department, Agriculture Faculty, Cairo University. She has been completed from Plant Biotechnology Department, Genetic Engineering and Biotechnology Division, National Research Center. She has been 10 papers published in reputed journals and serving as a reviewer member in African Journal of Biotechnology.

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15th International Conference on Agriculture & Horticulture; Webinar- August 24-25, 2020.

Abstract Citation:

Nermeen M. Arafa, Screening the extraction performance of aprotic polar and non-polar solvents on the proportional variances of saturated fatty acids in cassava cell cultures and their cytotoxicity assessment, Agri 2020, 15th International Conference on Agriculture & Horticulture; Webinar- August 24-25, 2020

(https://agriculture-horticulture.conferenceseries.com/abstract/2020/screening-the-extraction-performance-of-aprotic-polar-and-non-polar-solvents-on-the-proportional-variances-of-saturated-fatty-acids-in-cassava-cell-cultures-and-their-cytotoxicity-assessment)