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Production of natural pigments from native fungi as substitutions of food artificial colorants

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There is worldwide interest in process development for the production of pigments from natural sources due to hazardous effects of many artificial synthetic colorants which have widely been used in food and pharmaceutical industries. Production of pigments by fungi is a very important taxonomic criterion which had been used in classification of fungi in the last century. The present work aimed to study the production of pigment from four taxa of terrestrial fungi. Among four fungal strains namely: *Aspergillus sydowii, Eurotium rubrum, Quambalaria cyanescens and Penicillium purpurogenum. P. purpurogenum* came first by showing the highest yield of red pigment (RP) production after 7 days of incubation in static culture at 20°C in the presence of sucrose and peptone as the sole carbon source and nitrogen source respectively at an initial pH value of 6.5. Statistical experimental designs were applied to optimize the fermentation medium for red pigment production. Plackett–Burman design was applied to identify the significance of different medium variables. The red pigment of fermentation broth was extracted by using petroleum ether. This research was monitored and controlled using spectroscopic analysis including TLC, FT-IR and GC-MS analysis. The anticancer activity of P. Purpurogenum's red pigment was evaluated using four different human cell lines (HepG2, HCT-116, MCF-7,HEP-2) showing inhibitory effects against all of them. The present study revealed that the native isolate of P. purpurogenum can produce a safe red pigment which may have a lot of applications in children food industries with an inhibitory effect on anticancer.

Keywords: anti-cancer, cell line, fermentation, GC-MS, pigment, TLC.

Biography

Nancy A. Ibrahim has an M.Sc. in Microbiology (2016), Faculty of Science, Alexandria University, Egypt. She is currently a microbiology specialist at the Ministry of Health & Population, Central Labs, Damanhour branch, and a part time assistant lecturer of microbiology, Faculty of Dentistry, Pharos University. She accumulated 6-years of experience in food and water analysis and supervision, and participated in a number of regional and international conferences including the International Conference of Genetic Engineering and Biotechnology, April 26 - 29, 2016 (GEBRI) & 7th students` research and innovations conference, Faculty of science, Alexandria University, April 2018.

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