Commentary

Pharmaceutical BIOPROCESSING

A Note on the Effective Production of Bioactive Molecules by an Edible Mushroom in a Batch Stirred Tank Bioreactor

Abstract

Production of bioactive metabolites of the common edible mushroom oyster mushroom. The biomass of the mushroom strain was made by submerged fermentation in a very batch stirred tank bioreactor and extracted by solvents of accelerating polarity. The chloride and methyl alcohol extract were fractioned by totally different techniques together with sorption natural process and quick Centrifugal Partition natural process (FCPC). The structures of pure compounds were elucidated with 1D/2D NMR-spectroscopic analyses, and chemical correlations combined with GC/MS and LC/MS experiments. Nineteen metabolites (e.g., fatty acids, phenolic resin metabolites, nucleotides and alkaloids) were isolated. on the far side the assembly of better-known metabolites, we tend to report herein the assembly conjointly of trans-3, 4-dihydro-3, 4, 8-trihydroxynapthalen-1(2H) - one, indolo-3-carboxylic acid, 3-formylpyrrole and 4-hydroxybenzoic acid, that have pharmaceutical interest and area unit isolated for the primary time from genus Pleurotus strains.

Keywords: Quick Centrifugal Partition • Natural process, • Hypocholesterolemic

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Introduction

Currently, industrial mushroom merchandise area unit principally derived from the fruit bodies of field-cultivated mushrooms, that may be a long and effortful method. Submerged cultivation of edible and medicative mushrooms has received increasing attention round the world and is viewed as a promising various for economical production of biomass and valuable metabolites [1]. Specifically, it offers potential blessings of quicker production for each mycelia biomass and metabolites, in a very shorter fundamental measure inside reduced house and lesser probabilities for contamination.

Description

Based on existing literature information, all the isolates obtained from the fractionation and investigation of the DCM extract is also thought to be practical food ingredients or as constituents of nice interest to the pharmaceutical trade, exhibiting various health advantages like antiviral, antineoplastic and hypocholesterolemic activities [2]. curiously, the presence of linoleic (1), oleic (2), lipide (3) and saturated fatty acid (4) within the plant structure made in a very batch stirred bioreactor, that are anyway found in present fruit bodies of P. ostreatus, indicates that the established bioprocess doesn't stop the assembly of those main fatty acids. Similarly, the submerged fermentation appears to not stop the assembly of carboxylic acid (9), a phenolic resin compound that has been extracted before from the fruit body of P. ostreatus which conjointly exerts bactericide activities. The extraction of phenolic {resin|phenoplast|synthetic resin} compounds of the methyl alcohol (MeOH) extract was performed by adsorption-desorption processes exploitation XAD4 kind resin [3]. The chemical structure of the organic compound material favored sorption by weak interactions of molecules with moieties of high negatron density, like

aromatic rings. In distinction, sugars or polar lipids couldn't establish this type of interaction and were eluted with water flow throughout the removal part. The adsorbable phenolic resin compounds were recovered by extraction with MeOH, giving associate degree enriched extract. From this procedure it had been indicated that just about 14 July of the methanolic extract consists of phenolic resin compounds [4].

In addition, 4-hydroxybenzoic acid constitutes a standard phenolic resin secondary matter of upper fungi. curiously, a possible synthesis route for the assembly of 4-hydroxybenzoic acid is via the bioconversion of L-phenylalanine, associate degree aromatic aminoalkanoic acid gift within the gas supply used for the biomass production during this study (corn steep liquor), and that is used satisfactory by P. ostreatus. L-Phenylalanine may be deaminated to trans-cinnamic acid by a essential amino acid ammonia lyase. Trans-Cinnamic acid may be later on hydroxylated to β-hydroxyphenylpropionic acid, that successively may be regenerate via a β-oxidation step to carboxylic acid then to 4-hydroxy-benzoic acid by the action of polymer oxidase, associate degree protein gift in P. ostreatus cultures [5]. although 4-hydroxybenzoic acid has been once reportable in several genus Pleurotus mushrooms, its presence in P. ostreatus is reportable for the primary time during this work.Further natural action separation of fraction B3 by Sephadex LH-20 column chromatography(dimensions thirty six millimeter × 450 mm) within which extraction was distributed with MeOH (100%), and solvent flow three mL/min, resulted within the isolation of compounds fourteen (5.2 mg) and fifteen (6.8 mg). Fraction B4 was more refined by suggests that of reversed part preparatory HPLC to afford compound sixteen (13 mg) and thirteen (14.5 mg). what is more, fraction B5 derived from FCPC analysis, was subjected to Sephadex LH-20 chromatography (dimensions thirty six millimeter × 450 mm), eluted with MeOH (100%) and solvent flow three mL/min, to afford compounds eighteen (14.7 mg) and nineteen (11.5 mg). Generally, all fractions were at the start analyzed by attention. Precoated attention silicon oxide sixty F254 plates (Merck) were used (0.25 and a couple of millimeter layer thickness for analytical and preparatory attention, respectively). Spots were envisioned exploitation ultraviolet radiation|ultraviolet illumination|UV|actinic radiation|actinic ray} light, and vanillin-sulphuric acid chemical agent.

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None

Conflict of interest

No conflict of interest

References

1. Ying JZ, Mao XL, Ma QM *et al.* Icons of Medicinal Fungi from China *Science Press: Beijing, China,* (1987).
2. Sullivan R, Smith JE, Rowan NJ *et al.* Medicinal Mushrooms and Cancer Therapy: Translating a traditional practice into Western medicine. *Perspect. Biol. Med.* 49, 159–170(2006).
3. Barros L, Baptista P, Correia DM *et al.* Effects of conservation treatment and cooking on the chemical composition and antioxidant activity of Portuguese wild edible mushrooms. *J. Agric. Food. Chem.*, 55, 4781–4788(2007).
4. Gregori A, Svagelj M , Pohleven J *et al.* Cultivation Techniques and Medicinal Properties of Pleurotus spp. *Food Technol. Biotech.* 45, 238–249(2007
5. Tang YZ, Zhu LW, Li HM *et al.* Submerged culture of mushrooms in bioreactorschallenges, current-state-of-the-art, and future. *Food Technol. Biotech.* 45, 221–229(2007).