The structure of the glucuronoxylomannan produced by culinary-medicinal yellow brain mushroom (Tremella mesenterica Ritz.: Fr., Heterobasidiomycetes) grown as one cell biomass in submerged culture

The yellow brain mushroom Tremella mesenterica possesses a wide spectrum of medicinal properties, including immunostimulating, protecting against radiation, antidiabetic, anti-inflammatory, hypocholesterolemic, hepatoprotective, and antiallergic effects. A unique feature of T mesenterica is that most of the above mentioned medicinal properties depend on glucuronoxylomannan (GXM) contained in fruiting bodies or produced in pure culture conditions. We developed a new strain of T mesenterica CBS 101939, which grows in submerged culture and offers superior yields of one-cell biomass rich in exocellular heteropolysaccharide GXM. The structure of the GXM was analyzed by NMR spectroscopy and chemical methods. The polysaccharide has a defined repeating unit structure, which is O-acetylated at several points. [GRAPHICS] These results differ from previously published structure of Tremella extracellular polysaccharides, where mannan backbone was believed to be randomly glycosylated with xylan chains of different length.

(C) 2004 Elsevier Ltd. All rights reserved.
Web of Science (2012): Indexed yes
BFI (2011): BFI-level 1
Scopus rating (2011): CiteScore 2.43 SJR 0.762 SNIP 1.058
Web of Science (2011): Impact factor 2.332
ISI indexed (2011): ISI indexed yes
Web of Science (2011): Indexed yes
BFI (2010): BFI-level 1
Scopus rating (2010): SJR 0.73 SNIP 0.872
Web of Science (2010): Impact factor 1.898
Web of Science (2010): Indexed yes
BFI (2009): BFI-level 1
Scopus rating (2009): SJR 0.888 SNIP 1.024
Web of Science (2009): Indexed yes
BFI (2008): BFI-level 1
Scopus rating (2008): SJR 0.859 SNIP 0.947
Web of Science (2008): Indexed yes
Scopus rating (2007): SJR 0.759 SNIP 0.891
Web of Science (2007): Indexed yes
Scopus rating (2006): SJR 0.643 SNIP 0.903
Web of Science (2006): Indexed yes
Scopus rating (2005): SJR 0.693 SNIP 0.992
Scopus rating (2004): SJR 0.636 SNIP 0.95
Web of Science (2004): Indexed yes
Scopus rating (2003): SJR 0.712 SNIP 0.976
Web of Science (2003): Indexed yes
Scopus rating (2002): SJR 0.77 SNIP 0.948
Web of Science (2002): Indexed yes
Scopus rating (2001): SJR 0.731 SNIP 0.829
Scopus rating (2000): SJR 0.797 SNIP 1
Web of Science (2000): Indexed yes
Scopus rating (1999): SJR 0.721 SNIP 0.87

Original language: English
Keywords: MESENTERIC artery, Agaricales, Biomass, Carbohydrate Sequence, Magnetic Resonance Spectroscopy, Molecular Sequence Data, Polysaccharides, 76082-65-0 glucuronoxylomannan, Cell culture, Immunology, Nuclear magnetic resonance spectroscopy, glucuronoxylomannan, polysaccharide, unclassified drug, article, biomass, chemical structure, fungal strain, fungus culture, Heterobasidiomycetes, nonhuman, nuclear magnetic resonance, priority journal, structure analysis, tremella mesenterica, Basidiomycota, Fungi, Tremella, Tremella mesenterica, Anti-inflammatory, Antidiabetics, Basidiomycetes, Extracellular polysaccharide, Glucuronoxylomannan, GXM, glucuronoxylomannan, X, BIOCHEMISTRY, CHEMISTRY, CYTOKINE-STIMULATING ACTIVITIES, CRYPTOCOCCUS-NEOFORMANS, ACIDIC POLYSACCHARIDE, FRUITING BODIES, FUCIFORMIS, AURANTIA, HETEROGLYCANS, DEGRADATION, SPECTRA, TAP, basidiomyces, fungi, extracellular polysaccharide, cell biomass, Fungi Plantae (Fungi, Microorganisms, Nonvascular Plants, Plants) - Basidiomycetes [15300] Tremella mesenterica species medicinal plant strain-CBS 101939, strain-NRRL Y-6158, glucuronoxylomannan 76082-65-0 antiallergic-drug, antidiabetic-drug, antihyperlipoproteinemidic-drug, antinflammatory-drug, cardiovascular-drug, gastrointestinal-drug, hepatoprotectant-drug, immunologic-drug, immunostimulant-drug, radioprotectorant-drug, 12512, Pathology - Therapy, 20504, Nervous system - Physiology and biochemistry, 22010, Pharmacology - Cardiovascular system, 22012, Pharmacology - Connective tissue, bone and collagen-acting drugs, 22014, Pharmacology - Digestive system, 22016, Pharmacology - Endocrine system, 22018, Pharmacology - Immunological processes and allergy, 32500, Tissue culture, apparatus, methods and media, 54000, Pharmacognosy and pharmaceutical botany, Pharmacology, brain nervous system, cell culture culturing techniques, laboratory techniques, chemical analysis laboratory techniques, NMR nuclear magnetic resonance laboratory techniques, spectrum analysis techniques, Pharmacognosy, EDIBLE FUNGI, FUNGI EDIBLE, GLUCOMANNANS, POLYSACCHARIDES, STRUCTURE, Fruits, vegetables and nuts, Other vegetables (including macrofungi)

DOIs: 10.1016/j.carres.2004.04.001
Source: FindIt
Source-ID: 1083162
Research output: Research - peer-review > Journal article – Annual report year: 2004