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Kick off meeting fungi

Presentation of Cécile Villiger

Swiss Food Research

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Outline:

presentation of

- Fine Funghi AG
- ideas: King oyster filet & vitamin-D food supplement out of fungi-waste
- VSP: Mushroom cultivation association

Fine Funghi

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- founded in 1988 through Patrick Romanens
- 2017 company sale to Wauwiler AG
- Organic mushroom production/year:
  - 170t exotics in Gossau
  - 1000t agaricus in Wauwil

  → growth rate 30%

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The mushroom varieties of Fine Funghi

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Exotics

Sawdust

gypsum

supplements

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Produktionsprozess

1. Substrat Produktion

Sterilisation, beimpfen mit Pilzmyzel, abfüllen in Säcke

2. Inkubation

Pilzmyzel wächst und ernährt sich vom Substrat

3. Fruktifikation

Nach erlangen der Reife bilden sich Fruchtkörper

4. Ernte

Pilze von Hand, mit dem Messer ernten

5. Desinfektion

Desinfektion als Hygiene Massnahme

30.09.2021

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What happen with the «waste» material?

- remaining substrate → agriculture as fertilizer/mulch material
- Rests of mycelium → cattle feed

- Agaricus: compost-gas

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Ideas

1. King oyster filet

To make the barbecue range more sustainable….

Reasons
- Not processed
- Local, organic
- Mai – August 50% production reduction
- general sorting out of mushrooms that are too big

For people who want to want less meat and more local food

Disadvantage:
Not as high in protein like meat

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Ideas

1. King oyster filet

https://tekoafarms.co.il/en/recipe/pan-fried-king-oyster-mushroom-steaks-chimichurri/

https://www.pinterest.ch/pin/14073817573947091/

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Ideas

2. Vitamin-D Food supplement out of fungi-waste

Basis:
- Mushroom production produces up to 30 % waste
- (misshaped caps, stalks, stems)

- Federal Office of Public Health recommends supplementation of vitamin D in various groups of people

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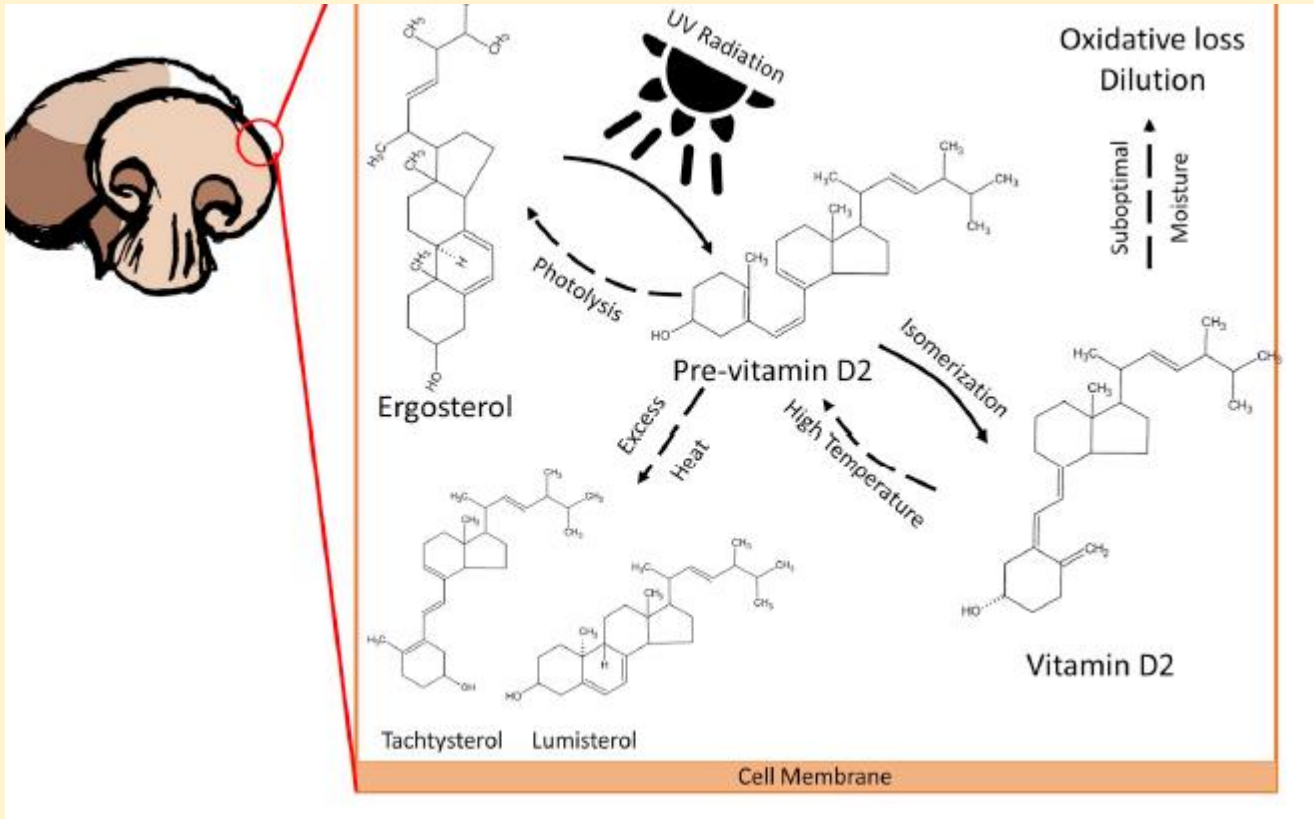
Ideas

2. Vitamin-D food supplement out of fungi-waste



- Mushroom contain high levels of ergosterol (= precursor of vitamin D)
- Vitamin D2 can be achieved by UV irradiation

→ Mushroom waste could be used for preparation of extracts enriched in vitamin D for
  - pharmaceutical
  - food industry

https://www.sciencedirect.com/science/article/pii/S092422442030008X

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Ideas

2. Vitamin-D food supplement out of fungi-waste

Carbohydrate Polymers 167 (2017) 97–104

Contents lists available at ScienceDirect

Carbohydrate Polymers

journal homepage: www.elsevier.com/locate/carbpol

Vitamin D-fortified chitosan films from mushroom waste

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ARTICLE INFO

Article history:
Received 15 December 2016
Received in revised form 10 February 2017
Accepted 5 March 2017
Available online 6 March 2017

Keywords:
Mushroom
Chitosan
UV light

ABSTRACT

Brown mushroom (*Agaricus bisporus*) stalk bases from mushroom waste were treated with UV-B light to rapidly increase vitamin D_2 content. Chitin was also recovered from this waste and converted into chitosan by *N*-deacetylation. FTIR spectra showed that the mushroom chitosan were similar to chitosan from animal sources. Chitosan films were prepared using high molecular weight (HW), low molecular weight (LW) and fungal chitosan. UV-B treated mushroom particles were also incorporated into fungal chitosan films. The fungal chitosan films showed similar density, porosity and water vapor barrier properties to the LW and HW chitosan films. However, fungal chitosan films were more hydrophobic and less flexible than the LW and HW chitosan films. Addition of mushroom particles did not significantly affect mechanical or water barrier properties of the fungal chitosan films.

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Ideas

2. Vitamin-D food supplement out of fungi-waste

A natural food ingredient based on ergosterol: optimization of the extraction from Agaricus blazei, evaluation of bioactive properties and incorporation in yogurts

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Affiliations + expand

PMID: 29488518 DOI: 10.1039/c7fo02007d

Free article

Abstract

In recent years, mycosterols have emerged as potential functional ingredients for the development of sterol-enriched food products and dietary supplements. Agaricus blazei is a mushroom rich in bioactive compounds. For commercial purposes, their fruiting bodies must obey rigid morphological

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Ideas

References

Bilbao-Sainz, C., Chiou, B.-S., Williams, T., Wood, D., Du, W.-X., Sedej, I., et al. (2017).
Vitamin D-fortified chitosan films from mushroom waste. *Carbohydrate Polymers, 167*,
Correa, R. C. G., Barros, L., Fernandes, A., Sokovic, M., Bracht, A., Peralta, R. M., et al.
(2018). A natural food ingredient based on ergosterol: Optimization of the extraction
from *Agaricus blazei*, evaluation of bioactive properties and incorporation in yogurts.
Recovery of ergosterol and vitamin D2 from mushroom waste - Potential valorization by food and pharmaceutical industries (2020)
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Verband Schweizer Pilzproduzenten VSP

Swiss Food Research
Kick Off Fungi

VSP, 07. September 2021

Verband Schweizer Pilzproduzenten VSP

Gegründet: 1938

Mitglieder: 15 Mitglieder mit 14 Produktionsbetrieben davon:

- 7 Betriebsstandorte Champignons inkl. Bio
- 7 Betriebe Edelpilze (davon 6 Bio)

Produktion: 7’802 t Champignons frisch > 65 % Marktversorgung

2020 437 t Edelpilze frisch > 30 % Marktversorgung

- Shiitake (25%)
- Pleurotus (28%)
- Kräuterseitlingen (35%)
- Weitere (im Aufbau)

Marke: Champignons Suisses – in der Schweiz produzierte Kulturpilze

Ziel: wirtschaftliche Schweizer Pilzproduktion in die Zukunft führen

4 Werte Marke Champignons Suisses

Gesund und vielfältig

Nah und frisch

Champignons Suisses

Vertraut und sicher

Umweltschonend

VSP Entwicklungs- und Handlungsfelder

Vertraut und sicher

Umweltschonend

Projekte Nachhaltigkeit und Innovationen

Projekte Nachhaltigkeit und Innovationen

- **Produkt**
  - Pilzchips, Weiterverwertung 2 / 3 Qualität Kräuterseitlinge mit HAFL
  - Pilzkäse, Weiterverwertung 2 / 3 Qualität Champignons mit HAFL
  - CHAMPIDOR – Schweizer Vitamin D Champignons

- **Produktion**
  - Pflückautomation für Champignons
  - Torfreduktion
  - Nachhaltigkeitsprozesse der einzelnen Betriebe

- **Wiederverwertung**
  - Protein mit Insekten aus Edelpilz-Abbausubstrat
  - ChamPost aufwerten zu organischem Dünger (bei Produzenten)
  - Ideenphase: Verpackung aus Pilzmyzel

Verschiedene Projekte mit der HAFL, Hochschule für Agrar-, Forst- und Lebensmittelwissenschaften

Thank you for you attention