Abstract book

The eighth international workshop
on edible mycorrhizal mushrooms

IWEMM8

The sixth conference of the *Tuber aestivum/uncinatum*
European scientific group

TAUESG 6

Livre des résumés

Congrès international
sur les champignons mycorhiziens comestibles

October 10th - 17th 2016
10 -17 octobre 2016
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http://www.iwemm8-cahors.com/

Topic of the congress

(Les thèmes du congrès)

1. Culture
2. Biologie
3. Ecologie
4. Taxonomie
5. Biologie moléculaire
6. Changement climatique
7. Développement de l'économie rurale
8. Mycotourisme, agritourisme et gastronomie
9. Chimie alimentaire et bénéfices sur la santé
10. Conservation et protection de l'environnement
11. Gestion des populations en milieu naturel et cultivé
12. Autres questions relatives aux champignons mycorhiziens comestibles

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(Le Comité scientifique international)

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- Carolina Barroetaveña - Argentine
- Dominique Barry - France
- Gérard Chevalier - France
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- Yu Fuqiang - Chine
- Alessandra Zambonelli - Italie

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CONTRIBUTION OF PHENOLIC ACIDS TO THE ANTI-INFLAMMATORY ACTIVITY OF EDIBLE MYCORRHIZAL MUSHROOMS

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Edible mycorrhizal mushrooms are rich in several bioactive compounds responsible for their interesting health benefits (1). Polysaccharides, terpenoids and phenolic compounds have been indicated as the most important contributors to the anti-inflammatory activity of mushroom species (2).In the present study, ethanolic extracts of seven mycorrhizal mushrooms were obtained by maceration and chemically characterized in terms of phenolic acids by HPLC-DAD. The extracts, the identified phenolic acids and also synthesised methylated and glucuronated derivatives of those acids were studied regarding anti-inflammatory activity evaluated through inhibition of nitric oxide (NO) in LPS (lipopolysaccharide) activated RAW 264.7 macrophages. Among the studied mushrooms, *Boletus impolitus* presented the highest amount of phenolic acids (675± 23 μg/g), due to the high contribution of cinnamic acid(505 ±12 μg/g), and also displayed the highest NO production inhibition(EC_{50}=166 ± 10 μg/mL). The phenolic acids content in the different species was as follows: *B. impolitus >C. cibarius>A. caesaria>L. deliciosus>B. aereus>M. esculenta>B. edulis,* while the NO production inhibitionEC_{50} values were in the order:*B. impolitus >A. caesaria>C. cibarius>L. deliciosus>M. esculenta>B. aereus>B. edulis*. Among the individual compounds, cinnamic acid (CA) showed the highestactivity(EC_{50}= 182 ± 16 μM), followed by*p*-hydroxybenzoicacid (HA; 239 ± 29 μM)and *p*-coumaric acid (CoA; 442± 33 μM), which highlights the contribution of cinnamic acid for the anti-inflammatory potential displayed by mushrooms. Comparing the NO production inhibition activity of the parent phenolic acids and their conjugated derivatives (G-glucuronated, M-methylated), the order was as follows: *p*-hydroxybenzoic acid: HA > HA-M3 > HA-M2 > HA-M1 > HA-G; *p*-coumaric acid: CoA-M1 > CoA-G> CoA-M2 > CoA-M3 > CoA and cinnamic acid: CA-G > CA > CA-M. The results in the present study show the contribution of phenolic acids to the anti-inflammatory activity of mushrooms and also demonstrated that conjugation reactions can influence the bioactivity of the phenolic acids.

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