



# MEMORIES

The 7th International Workshop  
on Edible Mycorrhizal Mushrooms



La Antigua Guatemala, Guatemala  
July 30th - August 3rd, 2013



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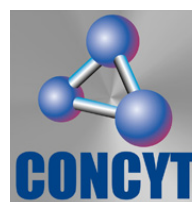
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# THANKS TO



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# INTRODUCTION

In these pages you will find the abstracts of presentations and posters shown at the 7th International Workshop on Edible Mycorrhizal Mushrooms-IWEMM-7 held in La Antigua Guatemala, from 29 July to August 02 of 2013.

They are the result of the effort of many researchers of the world that decided to come despite of the difficulties derivate of the current economical global crisis, trusting and helping to contribute to the development of the science, especially on the ectomycorhizal edible mushrooms field and how to approach them to behave, protect and conserve natural forest and ecosystems as well as plantations for reforestation and production valuable edible mushrooms.

You will also find abstracts of researchers that could not come due to illness or lack of financial support. We really feel the absence of African colleagues that sent very important documents about diversity of ECM in that amazing Continent, place of possible origin of some genera.

This IWEMM-7 was a success not only by the presence of researchers of 28 countries, the high quality of presentations and posters but the participation of scientists with a high human sense and wish of transform the current world into a more communicative and conscientious world.

It was also a success because of the participation of more Latin

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American mycologists, professionals and students that for first time participate in the history of IWEMM's. That was the goal of the name of this IWEMM-7: Toward a New World, because the "New World", as was known the American Continent centuries ago, it's the place of important evolution centers for biodiversity including mushrooms and where countries still remain unstudied awaiting the presence of local and international mycologists groups decided to work together for the benefit of local people, ecosystems, universities and research centers. Latin America includes some countries declared Megadiverse as Guatemala, Costa Rica, Mexico, Brazil, and others. This fact is an opportunity to invest in research in these countries to obtain information that could give answer to alimentation problems, climatic change and adaptation of species, medicinal and pharmaceutical components present in fungal species to old and new illnesses as well as places of recreation as scientific tourism. All countries have a great deposit of cultures and knowledge that one can discover and enjoy by sharing, teaching, learning and studying.

University of San Carlos de Guatemala, the second university erected in the Americas (1676), is a pioneer in mushrooms studies in Central America and opens its doors to all scientist who want to collaborate to know better the local diversity of ectomycorrhizal mushrooms at phylogenetic, taxonomic, evolutive, pharmaceutical, cultivation and production of valuable edible species.

The more we know, the more we can give to future generations in a New World.

Dr. Roberto Flores Arzú  
CHAIRMAN IWEMM-7

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**Chemical characterization  
of four edible mycorrhizal  
mushrooms: nutrients and  
bioactive compounds.**

Martins, A.  
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Mushrooms have been consumed not only as a part of the normal diet, but also as a delicacy due to their highly desirable taste and aroma. Besides, the nutritional, tonic and medicinal properties of mushrooms have been recognized for a long time<sup>1</sup>. In addition to their nutritional value, some mushrooms may also have a medicinal value; antitumor,

antiviral and hypolipidemic effects have been reported<sup>2</sup>.

This work reports the chemical characterization of four wild edible mycorrhizal mushrooms: *Amanita mairei*, *Boletus regius*, *Russula aurea* and *Russula virescens*, appreciated all over the world. The nutritional value was assessed through the composition in macronutrients determined following official procedures; individual profiles in sugars and fatty acids were obtained by HPLC-RI and GC-FID, respectively. Bioactive compounds such as tocopherols were analysed by HPLC- fluorescence. Carotenoids were determined spectrophotometrically. Organic acids and phenolic compounds were determined by UFLC-PDA and HPLC-DAD, respectively. The antioxidant potential was evaluated through the free radical scavenging activity, reducing power and lipid peroxidation inhibition. Carbohydrates

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were the most abundant macronutrients present in the studied species, and the highest levels were found in *B. regius*. Mannitol and trehalose were the main sugars quantified in the analyzed samples. Unsaturated fatty acids predominated over saturated fatty acids, being *A. mairei* and *B. regius* the species with the highest content in unsaturated fatty acids. The studied species revealed to possess powerful antioxidants such as tocopherols, lycopene, and phenolic compounds (mainly phenolic acids). *B. regius* was the species with the highest levels of tocopherols, citric acid and phenolic compounds, presenting also the highest antioxidant activity. Overall, the bioactive compounds identified in the studied wild mycorrhizal mushrooms could be extracted for the purpose of being used as nutraceuticals. Since these are edible species, they can also be incorporated directly in diet acting as functional foods.

### Keywords

Wild edible mycorrhizal mushrooms, nutritional value, bioactive compounds

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