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# ABSTRACT BOOK

**Bee pollen nutritional value and microbiological stability: influence of preservation techniques**I. Mekki <sup>1</sup>, F.H.C. Lema <sup>1</sup>, A. Tomás <sup>1</sup>, S.I. Falcão <sup>1</sup>, V.M.R. Martins <sup>1,2</sup>, P. Rodrigues <sup>1</sup>, M. Vilas Boas <sup>1</sup><sup>1</sup> Centro de Investigação de Montanha (CI MO), Instituto Politécnico de Bragança, Bragança, PORTUGAL, <sup>2</sup> QOPNA & LAQV-REQUIMTE - Departamento de Química, Universidade de Aveiro, Aveiro, PORTUGAL

Bee pollen is often considered a highly nutritive foodstuff. After its collection, the bee pollen can present moisture contents ranging from 18% to 25%, depending on the gathering season and trapping technique [1]. These moisture contents, combined with the high nutritional value of bee pollen, provide conditions highly favorable to microorganism growth and undesirable pollen fermentation. Moreover, when not preserved adequately, its nutritional value can be quickly reduced, due to Maillard reactions [2]. Thus, after collection it is necessary to reduce the bee pollen moisture content in order to maintain its overall nutritional quality and microbiological safety. The main objective of this work is to provide an insight regarding the potential influence of the applied preservation techniques on the nutritional value and microbiological quality of bee pollen.

The bee pollen, which was collected in beehives located in the northeastern Portuguese region of Bragança, had a moisture content of 13.8%. Subsequently, the fresh pollen was submitted to various preservation techniques, namely oven drying at three distinct temperatures (35°C, 40°C, and 45°C) and freeze-drying. The pollen samples dried at 35°C, 40°C, and 45°C presented moisture contents of 9.6%, 9.8%, and 10.1%, while the freeze-dried sample had a moisture content of 5.8%. The nutritional value of the preserved bee pollen was assessed throughout time during a period of 6 months, through the determination of the moisture, ash, protein, crude fat, and carbohydrate contents. The effect on the microbiological quality was also analysed, and included the parameters: total viable counts (aerobic mesophiles), lactic acid bacteria, yeasts and molds. In general, the different treatments showed no significant immediate impact on the microbiological loads of bee pollen, but changes were observed after one month of storage, mostly in total viable counts and lactic acid bacteria.

## References

[1] Casaca, J.D. (2010). Manual de produção pólen e própolis. Federação Nacional Apicultores de Portugal (Eds.), Lisboa.

[2] Almeida-Muradian, L.B.; Pamplona, L.C.; Coimbra, S.; Barth, O.M. (2005). Chemical composition and botanical evaluation of dried bee pollen pellets. *J. Food Compos. Anal.*, 18, 105–111.

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**Phytochemical, physicochemical and pollen characterization of the organic honeys of the Moroccan Atlas**T. Bouddine <sup>1</sup>, F. Khallouki <sup>2</sup>, E. Bruneau <sup>3</sup>, I. Guirrou <sup>4</sup>, H. Mazouz <sup>1</sup>, H. Hajjaj <sup>1</sup>, G. Smaghe <sup>5</sup>, L. Hajji <sup>1,2</sup><sup>1</sup> Faculty of Sciences, Moulay Ismail University, Meknes, MOROCCO, <sup>2</sup> Faculty of Sciences And Techniques, Errachidia, MOROCCO, <sup>3</sup> Beekeeping Research And Information Centre, Louvain La Neuve, BELGIUM, <sup>4</sup> Food Technology Laboratory, Inra Qualipôle Food, Meknes, MOROCCO, <sup>5</sup> Department of Crop Protection, Faculty of Bioscience Engineering, Ghent University, Ghent, BELGIUM

Moroccan atlas organic honey is a natural product made from medicinal plants. Its richness in bioactive compounds gives it nutritional and therapeutic properties.

This work aims at characterizing the quality of sixty-four samples of mountain organic honey collected from different Middle Atlas stations in Morocco. The characterization of honey is carried out by analyzing the physicochemical properties, antioxidant capacity and the botanical origin by the pollen analysis. The microbiological quality of the different honey samples was also determined.

The physicochemical parameters were evaluated by analyzing 12 parameters recommended by the European quality control and food safety legislation. In addition, tests of antioxidant activity were performed to evaluate the antioxidant content of organic honey samples.

The results of the physicochemical parameters confirm that all our organic honey samples respect the high-quality control standards. Preliminary analyzes of honey samples studied have shown an undeniable richness in polyphenolic compounds including syringic acid and chlorogenic acid.

Microbiological analyzes confirm that these samples have an acceptable microbiological profile; none of the analyzed samples contains microorganisms having an impact neither on the organoleptic quality nor on the health of the consumer. Finally, the results of the botanical analysis showed new non-listed pollen from endemic medicinal plants as well as the results show the authenticity of the biological honey collected and the information pronounced by the beekeepers.

**The influence of the application of new regulations on the production of honey in the republic of Serbia**B. Pisinov <sup>1</sup>, M. Rovcanin <sup>1</sup>, N. Rokvic <sup>2</sup>, M. Radovic <sup>2</sup>, S. Rasic <sup>3</sup><sup>1</sup> Honey Kings Ltd., Belgrade, SERBIA, <sup>2</sup> Honey Kings Ltd., Belgrade, SERBIA, <sup>3</sup> Institute of Veterinary Medicine of Serbia, Belgrade, SERBIA

The main objective of this study was to review the effects of the application of the new Regulation on the declaration, labeling and advertising of foods to honey producers in the Republic of Serbia, through the evaluation of quality, sensory properties and labeling of eighty different honey samples collected from markets in Serbia and verifying their legal compliance. Physicochemical properties, sensory and labeling of three honey types acacia, blossom and honeydew were studied. In order to prevent the deceitfulness of end-users, especially in terms of: characteristic food properties and contents, ascribe attributes and properties that does not possess, indicate the specific properties,