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(NU-P-2) Effect of Gamma-irradiation on the Microbiological Quality of Dehydrated Bee-pollen

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The objective of this study was to determinate some microbiological parameters of seven dehydrated bee-pollen collected from September to December of 2012, in Brazil, before and after irradiation, in order to observe if the conservation process influenced the final microbiological load. All bee-pollen samples were collected in the same apiary and processed as usual; then one parcel of each one was gamma-irradiated to achieve dose of 5.0 kGy with a cobalt-60 source (by EMBRARAD/Empresa Brasileira de Radiações Ltda, Cotia, São Paulo, Brasil). The bee-pollen samples were analysed to enumerate aerobic mesophilic and psychotrophs bacteria, *Staphylococcus aureus*, total coliforms and yeasts and molds and to determine the presence or absent of sulphite-reducing *Clostridium* spores and *Salmonella*. Each sample (10 g) was homogenised and serial dilutions were inoculated on specific medium. Afterwards, incubations were performed depending on the microorganism (Estevinho et al., 2012). Results were expressed as colony-forming units per gram of dehydrated bee-pollen ($CFU.g^{-1}$) for mesophilic, psychotrophs, *Staphylococcus aureus*, total coliforms and yeasts and molds or as presence or absent for sulphite-reducing *Clostridium* spores and *Salmonella*. In the non-irradiated samples the aerobic mesophilic counts ranged $1.7x10^3$-$1.8x10^2$ $CFU.g^{-1}$ while for the irradiated samples all the counts were <1.0x10 $CFU.g^{-1}$. The psicotrophic counts ranged <1.0x10 $CFU.g^{-1}$-9.8x10 $CFU.g^{-1}$ for non-irradiated bee-pollen and <1.0x10 $CFU.g^{-1}$ to all the samples submitted to the treatment. In irradiated samples values for yeasts and molds below 1.0x10 $CFU.g^{-1}$ were also observed, while for non-irradiated samples the counts ranged $8.7x10^3$-2.0x10 $CFU.g^{-1}$. Regarding total coliforms, the highest counts were observed in irradiated samples ($2.7x10^3$- 2.0x10 $CFU.g^{-1}$), while in non-irradiated bee-pollen the values ranged $3.5x10^2$-<1.0x10 $CFU.g^{-1}$. These results suggest contamination after the treatment by microorganisms present in the environment or during the handling; therefore, special attention should be given to the practices adopted after the treatment by the producers. All the samples were absent regarding sulphite-reducing *Clostridium* spores and *Salmonella* and counts <1.0x10 $CFU.g^{-1}$ to *Staphylococcus aureus*. In general, the use of gamma-irradiation proved to be a satisfactory alternative to reduce the microbiological load on dehydrated pollen, but it is necessary to adopt good practices after treatment to prevent recontamination.

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Estevinho ML, Rodrigues S, Pereira AP, Feás X (2012) Portuguese bee pollen: palynological study, nutritional and microbiological evaluation. *International Journal of Food Science and Technology* 47: 429–35.

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