

## Analysis of French royal jelly for quality and authenticity controls

Gaëlle DANIELE\*(a) and Hervé CASABIANCA(a)

(a)Service Central d'Analyse CNRS – Echangeur de Solaize – Chemin du canal – 69360 Solaize – France (Tel : +33(0)478022226 ; Fax : +33(0)478027187)

The aim of our study is to characterize French Royal Jelly (RJ) in order to define a standard composition and evaluate the quality of commercial products.

200 RJs produced recently in France were analyzed. Due to the important heterogeneity of the materials depending on the environment of the hives, the climate, the soil etc, the samples were collected in different french regions during the course of the harvesting season representing various geographical and botanical origins. All the samples analyzed for creating our data base were provided by beekeepers belonging to the GPGR (Groupement des Producteurs de Gelée Royale), a french cooperative that respect a quality charter concerning the production, the sampling procedures and the storage of the RJ.

We have developed and validated analytical methods to quantify various parameters: water, protein, 10-HDA, amino acid, sugar contents. Moreover stable isotope ratios ( $^{13}\text{C}/^{12}\text{C}$  and  $^{15}\text{N}/^{14}\text{N}$ ) were measured in RJ samples by isotope ratio mass spectrometry.

In comparison, 35 commercially available RJ samples, as representative materials produced and traded worldwide, were analyzed by the same methods.

In addition, some feeding experiments with artificial sugars were conducted by some apiarists in order to evaluate the impact of sugar feeding on the composition of RJ.

This study has allowed to establish ranges of natural variation of different composition parameters in French RJ and to define criteria for genuine ones. Some parameters are essential to distinguish RJ produced in France from abroad RJ and/or from intensive feeding as it is shown on the representation of all the samples by PCA (Principal Component Analysis).