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Royal Jelly Proteome Explored



Royal Jelly Proteins Are Set

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Royal jelly is the key to a longer life. It keeps queen bees alive for 4-5 years whereas the worker bees, who feed on worker jelly, survive for a mere 3-4 weeks, so many people think it will lengthen our lifetimes too. This claim gains some support from the numerous benefits which royal jelly affords, such as antibacterial, antioxidant, anti-allergic and antitumour properties. Royal jelly comprises typically 60-70% water, 12-15% protein, 10-16% sugar and 3-6% lipids, with lesser amounts of vitamins, amino acids and salts, and the pharmacological properties have been attributed to various compounds across these classes...

The royal jelly proteome has been explored before but Asian scientists decide to undertake a comprehensive study using complementary techniques in an attempt to broaden the spread of identified proteins. For the same reasons, they collected royal jelly from European honeybees 24, 48 and 72 hours after it was deposited, as well as in two flower blossoming periods. The first was when dandelions and wild cherry were blooming and the second two weeks later when *Robinia pseudoacacia*, a tree known as the black locust, was in blossom.

The experimental protocol was described in the [Journal of Proteome Research](#) by lead reporter Masami Yonekura and co-researchers from Ibaraki University, The National Institute of Advanced Industrial Science and Technology (AIST) and Yonsei University in Japan and The Research Laboratory for Agricultural Biotechnology and Biochemistry in Kathmandu. Using a novel extraction protocol with the addition of two solubilising buffers, they obtained a "total soluble protein extract" with improved protein solubilisation.

This extract was analysed by both one- and two-dimensional gel electrophoresis to

maximise the number of proteins that were separated for analysis. They were identified by the standard proteomics technique of in-gel digestion followed by electrospray-tandem mass spectrometry with database searching.

The team found no noticeable differences in the protein profiles over the 24-72 hour periods. However, there were some variations in profile between the samples collected at different blossoming periods. By identifying the 8 proteins involved, the differences were attributed to the seasonal flower blooms, although this could not be verified at this stage. Overall, the royal jelly protein compositions were deemed to be stable...

In a [second study](#) published in the same issue of the Journal of Proteome Research, scientists from the Institute of Apicultural Research and the Institute of Crop Science at the Chinese Academy of Agricultural Sciences in Beijing examined the stability of the royal jelly proteins under long-term storage. Their aim was to find proteins that could be used as markers of freshness...