

Trends in the Market and Research of Propolis in Japan

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Major honeybee products consumed in Japan are *honey*—around 50,000 t, more than 90% of which are imported from China, North and South America; *royal jelly*—around 350 t, almost all of which come from China; and *propolis*. All are sold commercially as health foods.

Propolis, known also as bee glue, was imported from Europe in the 1960s by a Japanese company at a high price. Propolis was highlighted in Japan in 1985 when the Apimondia Congress was held in Nagoya. Several reports were delivered in the apitherapy section (Apimondia, 1985), and some beekeepers responded keenly. During the five years after 1985, bee products companies imported 10–20 t raw propolis per year from China and Brazil. Since Africanized honeybees seem to better foragers of propolis, Brazil has become a major supplier in recent years. Over 40 t was imported in 1991, and over 60 t in 1995 (Yamamoto, 1996). Market size is over 20 billion yen (approx. US\$ 170 million); and 10 ml of ethanol extracted propolis (EEP) is sold for about 2000 yen (approx. US\$ 17). EEP usually contains 10–30% solids of raw propolis. Almost all propolis is sold as health food although a few toiletries such as dental paste and skin-care cream are also marketed.

Many general and introductory books with empirical descriptions are published and they are popular among people who care for their health. To further development of the market, the Japan Propolis Conference (JPC) was established in 1987 and by 1997 had 13 member companies. In 1995, a quality standard for EEP was set up by JPC (Table 1). The Japanese Health and Nutrition Food Association also deals with propolis. It has a similar standard but also requires flavonoid determination: total flavonoid content as quercetin equivalent, qualitative flavonoid colouration with a reagent, presence of *p*-cumaric acid or cinnamic acid with HPLC analysis.

Table 1: Quality standards by Japan Propolis Association for ethanol extracted propolis (EEP)

Dry matter:	more than 8% (w/v)
Quercetin:	should be detected
UV absorbency:	maximal at 270–310 nm
Ethanol:	more than 50%
FOR OTHER THAN EEP (granule, tablet, etc.) further requirements	
General microbial counts should be less than 5×10^4 /g <i>Escherichia coli</i> should be negative	

Recently extraction methods have diversified with water extraction, micellized extraction, super-critical extraction, etc. JPC is trying to standardize quality but new techniques are being developed and JPC is struggling with water-soluble products. In contrast to EEP of which the main components are flavonoids, the new products do not have distinctive main components. Ministry of Health and Welfare regards these products solely as health foods, and prohibits their sale as medical agents.

Research in Japan on propolis has included the following. Dr Tetsuya Matsuno (NIH, Japan) reported antitumor activities of three compounds in propolis at the Japan Cancer Society meeting in 1991. This triggered extensive research at national and private institutions and universities on the effect of propolis (and its components) as antiviral, immune-activating,

antimicrobial (against *Helicobacter pylori*, MRSA, etc.) agents (Yamamoto, 1997). Now reports are frequently found in the annual meetings of cancer, pharmaceutical, medical, and agrochemical societies. Propolis Researchers' Association (PRA) was established in November 1997 with the aim of providing contact between researchers, producers, and consumers of propolis. Contact address of PRA: Nakane Building #301, Shinjuku 22-3-11, Tokyo 160-0022, Japan; (Fax 81-3-3226-5943).

References

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