DETERMINATION OF CALCIUM, COPPER AND NICKEL IN ROYAL JELLY

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ABSTRACT

DETERMINATION OF CALCIUM, COPPER AND NICKEL CONCENTRATION IN ROYAL JELLY

This experiment was done to determine the concentration of calcium, copper and nickel in Royal Jelly using Atomic Absorption Spectrometry (AAS). Two different methods were used which method 1 was carried out by using hydrochloric acid and method 2 was carried out by using hydrogen peroxide. The correlation coefficients from the calibration curve were 0.983, 0.997, and 0.998 for calcium, copper and nickel respectively. The highest concentration of calcium in Royal Jelly was sample 3 by using method 2 which was 316±0.021. The highest concentration of copper in Royal Jelly was sample 2 by using method 1 which was 0.977±0.050 and the highest concentration of nickel in Royal Jelly was sample 2 by using method 1 which was 0.039±0.003. This can be concluded that calcium has the highest concentration in Royal Jelly followed by copper and nickel.

CHAPTER 1

INTRODUCTION

1.1 Background of the study

Royal jelly is a secretion from the hypopharyngeal and mandibular glands of worker bees (*Apis mellifera*) and is involved in the sexual determination of the queen bee (Nagai *et al.*, 2004). The main components of Royal Jelly are water, proteins, sugars, lipids and other substances (Crane, 1990; Palma, 1992; Piana, 1996).

In the early 1950's, articles began to appear, particularly in the French beekeeping press, in praise of the virtues of Royal Jelly, referring to research conducted in several hospitals (Chauvin, 1968).

But in recent years, the physiological functionality of foods has received much attention, due to the increasing interest in human health, and it has been studied in vitro by many researchers (Ames and Gutteridge, 1995). Royal Jelly is extensively used as cosmetic or dietary supplement due to the belief that it exerts on human beings similar effects as it does on honeybees. Anti-aging (Rembold, 1965; Iannuzzi, 1990; Inoue *et al.*, 2003), hypoglycemic (Dixit and Patel, 1964; Kramer *et al.*, 1977; Fujii *et al.*, 1990), and anti-tumoral (Townsend *et al.*, 1959; Townsend *et al.*, 1960), are some of the properties attributed to royal jelly, although to date,