

QUALITY ANALYSIS AND ANTIMICROBIAL ACTIVITY OF CRUDE PROPOLIS AND COMMERCIAL PRODUCTS

羅子程、徐泰浩,張世揚

E-mail: 9015658@mail.dyu.edu.tw

ABSTRACT

PROPOLIS IS A HETEROGENEOUS MATERIAL COMPOSED OF REALLY COMPLEX SUBSTANCES, INCLUDES RESINS, BALSAMS, BEEWAXES, POLLEN, ESSENTIAL OILS, GATHERED BY BEES. PROPOLIS IS KNOWN TO HAVE BEEN USED IN OLD FOLK MEDICINE AS EARLY AS 300 BC. RECENTLY, IT WAS REPORTED TO POSSESS ANTIBACTERIAL, FUNGICIDAL, ANTIVIRAL, LOCAL ANAESTHETIC, ANTIULCER, IMMUNOSTIMULATING AND HYPOTENSIVE ACTIVITIES ETC. THESE VALUABLE PROPERTIES OF PROPOLIS ARE CREATED BY ITS SPECIAL CHEMICAL COMPOSITION, FATTY AND PHENOLIC ACIDS AND THEIR ESTERS, AROMATIC ALDEHYDES AND ALCOHOLS ETC., AS WELL AS A LARGE NUMBER OF FLAVONOID COMPOUNDS, WERE IDENTIFIED. THE OBJECTIVES OF THIS STUDY WERE TO ANALYZE THE PHYSICAL CHARACTERISTICS, CHEMICAL AND ACTIVE COMPOSITIONS AND TO APPROVE THE ANTIMICROBIAL ABILITY OF 6 CRUDE PROPOLIS FROM DIFFERENT SOURCE AND 16 COMMERCIAL PRODUCTS. THE PHYSICAL CHARACTERISTICS ANALYSIS INCLUDES DETERMINING OF WATER ACTIVITY, COLOR AND MELTING POINT. THE CHEMICAL COMPOSITION ANALYSIS OF INCLUDES DETERMINING OF ASH, BEEWAX, RESIN CONCENTRATION, IMPURITY, 95 % ETHANOLIC EXTRACTS AND FILTER PAPER DIFFUSION TEST. THE ACTIVE COMPOSITIONS ANALYSIS INCLUDES DETERMINING OF TOTAL FLAVONOIDS, TOTAL PHENOLIC SUBSTANCES, AND QUALITATIVE ANALYSIS BY TLC AND QUANTITATIVE ANALYSIS BY USING HPLC. THE ANTIMICROBIAL CHARACTERISTICS TEST INCLUDES DETERMINING THE MINIMAL INHIBITORY CONCENTRATION (MIC) AND THE ANTIBACTERIAL ABILITY OF DIFFERENT RESIN CONCENTRATION. THE ANALYSIS OF WATER ACTIVITY SHOWED THE AW VALUE WAS 0.45~0.90, THE DIVERGENCE WAS APPRECIABLE, THE MELTING POINT WAS 63~94 , THE AVERAGE BEEWAX OF CRUDE PROPOLIS WAS 25.12%, THE BEEWAX OF COMMERCIAL PRODUCTS WAS 0.24~64.19%, THE AVERAGE IMPURITY AND 95 % ETHANOLIC EXTRACTS OF CRUDE PROPOLIS WAS 15.24 % AND 63.24 % , IN COMMERCIAL PRODUCTS WAS 0.87~32.98% AND 53.15~98.81%. THE AVERAGE RESIN OF CRUDE PROPOLIS WAS 26.1 % , COMMERCIAL PRODUCTS WAS 2.88~79.92%. THE AVERAGE ASH OF CRUDE PROPOLIS WAS 7.00 % . HOWEVER, THE FILTER PAPER DIFFUSION TEST CAN NOT APPROVE THE ACTIVE COMPOSITIONS CONCENTRATION OF PROPOLIS. THE TOTAL FLAVONOIDS AVERAGE CONCENTRATION OF CRUDE PROPOLIS WAS 7.80 % , COMMERCIAL PRODUCTS WAS 0.79~14.88%. THE QUERCETIN AVERAGE CONCENTRATION OF CRUDE PROPOLIS WAS 1.38 % , COMMERCIAL PRODUCTS WAS 0.04~0.49 % . THE TOTAL PHENOLIC SUBSTANCES AVERAGE CONCENTRATION OF CRUDE PROPOLIS WAS 6.77 % , COMMERCIAL PRODUCTS WAS 0.46~6.27 % . SIMPLE QUALITATIVE ANALYSIS OF THE FERULIC ACID AND QUERCETIN BY TLC WAS AVAILABLE. IN THE ANTIMICROBIAL CHARACTERISTICS ASPECT, THE SENSITIVITY OF PROPOLIS, BACILLUS SUBTILIS WAS HIGHER THAN STAPHYLOCOCCUS AUREUS. . THE SERIES TESTS OF PROPOLIS ANTIMICROBIAL ABILITY WAS SHOWN APPARENTLY .

Keywords : PROPOLIS, COMPOSITION ANALYSIS, ACTIVITE COMPOSITIONS, ANTIMICROBIAL ABILITY

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