

ABSTRACT

Modern analytical techniques, including thin layer chromatography (TLC), high performance liquid chromatography (HPLC), gas chromatography (GC) and high performance capillary electrophoresis (HPCE), play a more and more important role in the quality control of Chinese medicines and/or natural medicines. Especially, capillary electrophoresis, a new technique developed in the 1980's, has been considered the most powerful and advanced branch in the field of analytical chemistry. It can be applied in different fields because of its outstanding advantages, such as high resolution, efficiency, autoimmunization, diverse separation models, little sample needed and etc.

The thesis consists of two parts:

1. Analysis of nucleosides and bases in *Cordyceps* using capillary electrophoresis (CE) was performed. The main parameters, such as boric acid concentration, pH and the proportion of acetonitrile used as the modifier for CE, were optimized by using orthogonal test and central composite design (CCD). Resolution (R_s) was used as the marker for evaluating the response function. The results showed that CCD is more powerful than orthogonal test on the optimization of CE conditions. Six nucleosides including adenine, adenosine, uracil, uridine, guanosine and inosine in *Cordyceps* were determined using adenosine-5'-phosphate as internal standard. The data performed the cluster analysis using the SPSS software, which showed CE was a simple method for discrimination of natural and cultured *Cordyceps*. Furthermore, adenosine and inosine were optimized as the markers for quality control of *Cordyceps*.

On the other hand, an attempt for analysis of nucleosides in *Cordyceps* by capillary electrochromatography (CEC) was also performed. The results showed bubble was the problem.

2. A capillary zone electrophoresis (CZE) method was developed for analysis of 5 anthraquinones including rhein, emodin, aloe-emodin, chrysophanol and physcion in *Rhubarb*. The optimized condition was: running buffer, 0.5M boric acid-sodium hydroxide buffer (pH 8.2) with 25% acetonitrile and 25% isopropyl alcohol as organic modifier; voltage, 25KV; temperature, 25°C. The established method was accurate, simple and rapid.

Key words: capillary electrophoresis (CE), Chinese medicines, *Cordyceps*, nucleosides, *Rhubarb*, antharquinones