ABSTRACT

Usnic acid is a yellowish pigment product of a fungal partner found in lichen, a symbiosis mutualism of fungi and photosynthetic partner which is usually algae. A high dosage of usnic acid (>100mg/kg of body weight) could cause direct damage to the liver cells by inducing an increase in hydrogen peroxide production in the liver. Due to this problem, many weight loss supplements containing usnic acid were taken off the market. HPLC was chosen as the analytical method to quantify usnic acid due to the universal usage of HPLC method to quantify organic acid with rapid and accurate analysis results. Within the replication of the literature HPLC conditions based on Cansaran *et al*. (2007), the author found several problems regarding the parameters within HPLC conditions stated in the literature. Due to this problem, several methods were altered starting from the flow rate alteration and the mobile phase changes in HPLC. The diluent of the usnic acid standard were also changed along with the elution mode and UV-Vis wavelength of the method. The final changes include volume injection alteration to find the best optimization method for usnic acid detection. The suggested HPLC conditions based on trial and error within the project are the utilization of gradient elution mode with the initial mobile phase composition of methanol: water (30%:70%). The methanol concentration is increased gradually within 10 minutes to 100% methanol, the ratio of methanol is decreased to 30%:70% (methanol: water) within 2 minutes, and the ratio is constantly kept for 3 minutes with the final run time of 15 minutes. The final suggested flow rate is 1 ml/min flow rate with the utilization of methanol as the standard diluent and detection of usnic acid in a UV wavelength of 290 nm as well as an injection volume of 5-10 µl. This method alteration was still incomplete as the method yield no quantitative result because of the incompatible column choice thus the usnic acid did not retain in the column to be analyzed. These suggestions however could simplify the error within usnic acid detection and utilized for further improvement in the detection of usnic acid in food and non-food products.

Keywords: Usnic Acid, usnic acid detection, HPLC parameters, literature replication, optimization method, method alteration.