DEVELOPMENT OF LIQUID CHROMATOGRAPHY - MASS SPECTROMETRY FOR QUANTITATIVE DETERMINATION OF PURINES AND URIC ACID IN THAI VEGETABLES

NARISA RUKDEE 5537588 PYPP/M

M.Sc. (PHARMACEUTICAL CHEMISTRY AND PHYTOCHEMISTRY)

THESIS ADVISORY COMMITTEE: CHUTIMA PHECHKRAJANG, Ph.D., PIYANUCH ROJSANGA, Ph.D.

ABSTRACT

This study was conducted to determine the amount of uric acid, and three of its precursors i.e., adenosine, guanosine and xanthine, in vegetables that were widely consumed in Thailand. An electrospray liquid chromatography triple quadrupole mass spectrometer (LC-MS/MS) was developed for this approach and caffeine was used as the internal standard. The separation was performed on a C18 column (10 cm × 2.1 mm, 2.7 µm). The mobile phase was a mixture of 0.2 % formic acid in deionized water (solvent A) and 0.1% formic acid in methanol (solvent B). Gradient elution was employed with a total run time of 8.50 minutes. The developed method was then fully validated according to USFDA guidelines. All method analytical performance characteristics were found to be acceptable. Therefore, the developed and validated LC-MS/MS method was applied to determine the amount of adenosine, guanosine, xanthine and uric acid in 18 selected Thai vegetables. The results showed that the contents of the four substances of interest in all vegetables examined in the study had less than 50 mg/100 g of fresh weight. At this concentration level, these vegetables could be classified as containing very low adenosine, guanosine, xanthine and uric acid contents. The results from this study promote valuable information for medical personal, especially hyperuricemia and gout patients, since the official report concerning uric acid and its purine precursors contents in Thai vegetables.

KEY WORDS: PURINE / URIC ACID / LC-MS/MS TRIPLE QUADRUPOLE MASS SPECTROMETRY

121 pages