

## Development of quantitative analytical method using liquid chromatography-tandem mass spectrometry for the tryptophan and its metabolites in serum and gastric juice to discovery biomarkers for the diagnosis of gastric cancer

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A quantitative analytical method was developed for the simultaneous detection of tryptophan and its metabolites (indole-3-lactic acid, anthranilic acid, serotonin, nicotinic acid, kynurenic acid, kynurenine and 3-indoxyl sulfate) in both human serum and gastric juice using liquid chromatography-tandem mass spectrometry. Serum and gastric juice samples were prepared with a simple protein precipitation procedure after optimizing solvents and pH conditions used. The stability conditions were also optimized and finally achieved a >70% recovery for all of the analytes. To simultaneously detect tryptophan and its metabolites using mass spectrometry, polarity switching was performed to alternate positive and negative ionization, which enabled both tryptophan and its metabolites to be detected in a single run. Acceptable levels of accuracy (within 20% in LOQ and 15% in other QCs) and precision (within 20% in LOQ and 15% in other QCs) were obtained in the intra- and inter-day validations of serum and gastric juice. The method successfully applied to identify the changes in tryptophan metabolism in patients with gastritis (control) and those with gastric cancer. By comparing the level differences in the serum and gastric juice, it was found that the kynurenine pathway of tryptophan metabolism was activated in gastric cancer and the metabolic ratio of kynurenine/tryptophan, which reflects the enzyme activity of indoleamine-2,3-dioxygenase, was associated with the observed metabolic changes. Finally, the analysis of tryptophan metabolites levels, especially kynurenic acid, in serum and gastric juice might serve as biomarkers for the diagnosis of gastric cancer.

### Biography

Byung Hwa Jung has completed her PhD from Seoul National University in 2000 and Postdoctoral studies from University of North Carolina at Chapel Hill, School of Pharmacy in 2004. She is a Principal Researcher and Center Head of Molecular Recognition Research Center at Korea Institute of Science and Technology (KIST). She is also an Adjunct Professor of University of Science and Technology. She has published more than 60 papers in reputed journals and serving as an Editorial Board Member of repute.

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