

## Development of dispersed solid phase extraction and LC-ESI-MS/MS method for inositol in infant formula

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**Introduction and Results:** An improved sample preparation method was developed for the determination of *myo*-inositol in infant formula. The *myo*-Inositol was extracted by IDF method for lactose and then the extracted solution was purified by using dispersed solid phase extraction with C18 and PSA (Primary Second Amine). *Myo*-inositol in the purified extraction was quantified by using LC-ESI-MS/MS (Liquid Chromatography-Electro Spray Ionization-tandem mass spectrometry) with ion-exchange column. A powdered sample was simply diluted with aqueous solution, and then hexane was used for removing lipid contents. After centrifuged, an aqueous layer was filtered by 0.2 µm nylon syringe filter and injected to LC-ESI-MS/MS for instrumental analysis. The result for recovery test for *myo*-inositol (free form) was between 80 ~ 120 % and the tested value using CRM (Certified Reference Material) was similar to the certified value of CRM (409 mg/kg, NIST SRM 1849a). This improved method for sample preparation and LC-ESI-MS/MS could be efficiently used for the accurate quantification of *myo*-inositol included in infant formula.

**Keywords:** Inositol; infant formula; d-SPE; LC-MS/MS

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**Introduction to the author:** Prof. Kim, Ph.D, corresponding author, has graduated from Kansas State University, USA in 2000, majoring in Food Science. He worked at the Korea Science and Engineering Foundation as a post doctor in Korea. He was consecutively occupied in serving the adjunct professor at College of Health Science in Korea University in Seoul, Korea and at Hemopoietic Stem Cell Transplantation Center in Catholic University in Seoul, Korea. Finally, He has served Konkuk University as a professor at Department of Food Science and Biotechnology of Animal Resources for five years. He is concerned about food microbiology, food sanitation and safety, functional foods, biochemistry, and etc. He is playing an important role as a committee member of food hygiene and functional foods at ‘Ministry for Food, Agriculture, Forestry and Fisheries’, ‘Ministry for Health, Welfare and Family Affairs’, ‘Korea Food & Drug Administration’, ‘National Veterinary Research & Quarantine Service’, and etc. to promote national health. In 2008, he was given a commendation for his excellent service to food hygiene and prevention of epidemics from a minister of Ministry for Food, Agriculture, Forestry. Also, in 2012, he was given a The Prime Minister's Commendation from Korea Food Drug Administration, 2012.

Dr. Jang-Hyuk Ahn, first author, completed his doctorate in Biological Science with the practical combination of lipid oxidation and antioxidant effect on lipid at the Department of Biological Science, Korea Advanced Institute of Science and Technology(KAIST) in 2007 after his master course for Food Science & Technology at Korea University. Currently, He is a Head of Food Safety Center, Namyang dairy R&D Institute. Concurrently, Dr. Ahn has served his adjunct professor of Department of Food & Nutrition, Chungnam National University since 2009. He also performs works for research projects from KFDA as a panel of judges. Dr. Ahn is recently applying principals of QuEChERS theory to developing various rapid methods for dairy products such as milk, infant formula, yoghurt and cheese. His research and activity is focused on chromatographic separation, mass detection, spectrometric detection, flavor chemistry, and various instrumental analyses. He has performed research 5 projects works from KFDA for recent 5 years as PI and co-worker. He has published more than 35 original research science papers related with food analysis in international journals.

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