**Determination of vitamin B12 in infant formula and serial based baby food**

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***Introduction and Results***

Development of sample preparation method and optimization of instrumental condition were performed for the determination of vitamin B12 in emulsified baby foods in Korea market. Vitamin B12 was extracted by water after removing milk protein and milk fat by chloroform and centrifugation. After the solution was filtered with Nylon filter, clean-up process by solid phase extraction (SPE) using hydrophilic-lipophilic balance cartridge was performed. The eluted solution was dried under a stream of nitrogen gas and reconstituted with 1 mL water. The sample solution was injected to LC-MS/MS (Liquid Chromatography with Tandem Mass Detector) after optimizing mobile phase for infant formula. The calibration curve showed good linearity with the coefficient of correlation (r2) 0.9999. The limits of detection (LOD) showed 0.03 μg/L and limit of quantification (LOQ) showed 0.10 μg/L. Detection limits in sample was 0.02 μg/kg. Recoveries through spiking test showed 99.62 % for infant formula and 99.46 % for cereal based baby food, respectively. The developed method would be proper appropriative method for the rapid determination of vitamin B12 in infant formula and baby foods with the emulsified milk characteristics.

***Keywords***: Vitamin B12, SPE, LC-ESI-MS/MS,

***Reference***

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Table 1. Results of recovery test for infant formula and cereal based baby food

|  |  |  |
| --- | --- | --- |
| Samples | Infant formula | Cereal based baby food |
| LOD*a* | 0.03 ㎍/L | 0.03 ㎍/L |
| LOQ*b* | 0.10 ㎍/L | 0.10 ㎍/L |
| Recovery*c* | 99.62 % | 99.46 % |

a Limit of Detection.

*b* Limit of Quantataion.

*c* Spiked concentration : 50 ㎍/L.

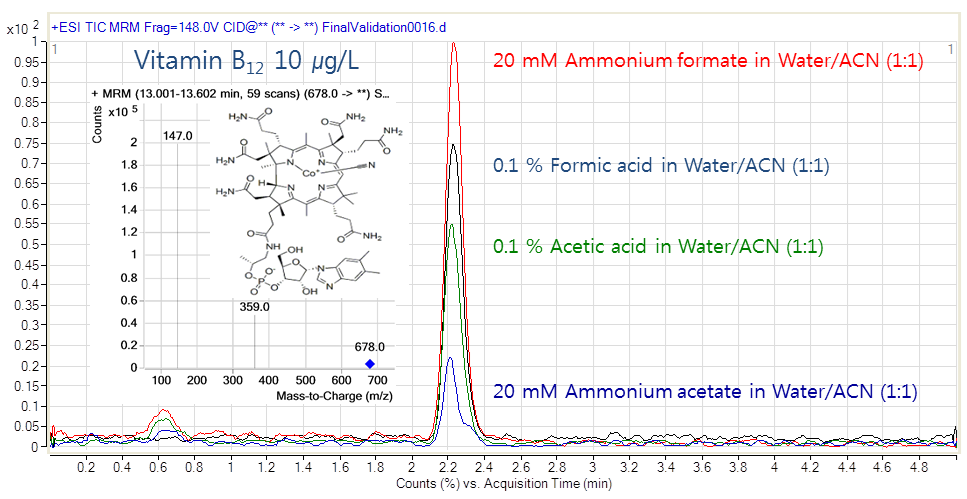


Figure 1. LC-MS/MS chromatogram of vitamin B12 by mobile phases and the mass spectrum of vitamin B12 in infant formula.

***Biography***

Dr. Jang-Hyuk Ahn completed his doctorate in Biological Science with the practical combination of lipid oxidation and anitioxidant 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. After contributing foods and food packages analysis at Lotte R&D Center from 1993 to 1997, he performed official duties for pesticides standard at KFDA (Korea Food & Drug Administration) from 1998 to 1999. He joined the Food Analysis Team at Namyang Dairy Research Institute in 1999, where he involved himself in the quality assurance for food safety and the analysis of food components including vitamins, minerals, fatty acids, mycotoxins, pesticides, and antibiotics. Currently, He is leading Food Safety Center, Namyang dairy R&D Institute. Concurrently, Dr. Ahn has been serving his adjunct professor lecturing Food Analysis Technology at Department of Food & Nutrition, Chungnam National University. He also performs works for research projects from KFDA as a panel of judges. Dr. Ahn has been recently developing various rapid methods for nutritions and hazardous materials in 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 5years as PI and co-worker. He has published 35 original research science papers related with food analysis in international journals. He is participated in IDF (International Dairy Federation)-Korea activity and acts as an accredited technical assessor for KOLAS (Korea Laboratory Accredited Scheme).