

VALIDASI METODE ANALISIS IODIN DALAM BISKUIT MP-ASI MENGUNAKAN *INDUCTIVELY COUPLED PLASMA MASS SPECTROMETRY*

INTISARI

Oleh:

SYAVANIA FANDY
20/456459/TP/12754

Saat ini banyak masyarakat yang peduli terhadap pemenuhan mikronutrien iodin pada bayi, yang penting untuk sintesis kelenjar tiroid dan perkembangan otak. Makanan Pendamping Air Susu Ibu (MP-ASI) menjadi sumber iodin bagi bayi setelah usia 6 bulan. *Inductively Coupled Plasma Mass Spectrometry* (ICP-MS) memiliki batas deteksi sangat rendah mencapai *part per trillion* (ppt) sehingga digunakan untuk menganalisis iodin dalam biskuit MP-ASI. Laboratorium PT Saraswanti Indo Genetech perlu memvalidasi metode pengujian ini sebelum diterapkan pada pengujian rutin untuk memperoleh hasil pengujian yang valid. Dengan demikian, penelitian ini dilakukan untuk mendapatkan validitas metode tersebut.

Pada penelitian ini, iodin diekstrak dengan tetrametilamonium hidroksida menggunakan *microwave digestion*, kemudian disuntik ke ICP-MS untuk pengukuran iodin. Parameter validasi metode yang diuji meliputi selektivitas, limit deteksi instrumen (LDI), limit deteksi metode (LOD metode), limit kuantifikasi metode (LOQ metode), rpitabilitas, presisi antara, dan akurasi.

Berdasarkan hasil penelitian, diperoleh nilai selektivitas sempurna untuk iodin dengan nomor massa 127, LDI 0,42 µg/L, LOD metode 0,015 mg/Kg, LOQ 0,11 mg/Kg, koefisien variasi rpitabilitas dan presisi antara masing-masingnya sebesar 7,76% dan 5,09%, serta akurasi dengan rentang *recovery* 90,41-109,46%. Hasil ini memenuhi persyaratan validasi berdasarkan panduan Eurachem (2014) dan AOAC Official Methods of Analysis: Appendix F (2016), sehingga metode analisis iodin dalam biskuit MP-ASI menggunakan ICP-MS ini sudah valid.

Kata kunci: Iodin, biskuit MP-ASI, ICP-MS, validasi metode

**METHOD VALIDATION OF IODINE DETERMINATION IN MP-ASI
BISCUIT USING *INDUCTIVELY COUPLED PLASMA MASS
SPECTROMETRY***

ABSTRACT

By:

SYAVANIA FANDY
20/456459/TP/12754

Nowadays, many societies are aware of the fulfillment of iodine micronutrition in infants which is essential for synthesizing thyroid and brain development. Complementary food (MP-ASI) becomes the source of iodine for infants starting after 6 months of age. Inductively Coupled Plasma Mass Spectrometry (ICP-MS) has a very low detection limit down to parts per trillion (ppt) which becomes the main reason for using ICP-MS to measure trace level of iodine in MP-ASI biscuit. PT Saraswanti Indo Genetech laboratory must be validated this method before applying to routine to obtain reliable result. Therefore, this study aims to obtain the validity of the method.

In this study, iodine was extracted with tetramethylammonium hydroxide by microwave digestion, then injected into the ICP-MS for iodine quantification. The method validation parameters tested include selectivity, instrument detection limit (LDI), limit of detection (LOD), limit of quantification (LOQ), repeatability, intermediate precision, and accuracy.

Based on the research, it was found the perfect selectivity value for iodine with mass number 127, LDI 0,42 µg/L, LOD method 0,015 mg/Kg, LOQ method 0,11 mg/Kg, coefficient of variation of repeatability and intermediate precision respectively are 7,76% and 5,09%, and accuracy with *recovery* 90,41-109,46%. These results have met the validation acceptance based on Eurachem (2014) and AOAC Official Methods of Analysis: Appendix F (2016), so this method of iodine determination in MP-ASI biscuit using ICP-MS is valid.

Keywords: Iodine, MP-ASI biscuit, ICP-MS, method validation