Section 28


Prenatal screening for chromosomal abnormalities, especially trisomy 21 (Down syndrome) has become a part of routine obstetric care. Currently in the Netherlands, testing in the first trimester using the combined test is the test of choice. This combined test calculates the individual woman’s risk for a Down syndrome affected pregnancy based on maternal age, maternal serum levels of free β-hCG (free β-hCG) and pregnancy associated plasma protein A (PAPP-A), along with ultrasound measurement of the fetal nuchal translucency. ADAM12s is the short and secreted splice form of ADAM12 and a placenta derived glycoprotein produced by trophoblasts. ADAM12s, like PAPP-A, is an insulin-like growth factor protease that has a role in regulating fetal growth by controlling the amount of bioavailable insulin-like growth factor (IGF) and IGF binding proteins (IGFBP). ADAM12s levels have been associated with an increase in insulin-like growth factor binding protein levels and reduced risk of preeclampsia or fetal growth restriction.*

In this letter, we describe the results of experiments that investigated the effects of processing and formulated guidelines for optimal storage and transport of ADAM12s, including ADAM12s concentrations in samples stored at -20°C, -80°C and -37°C. The stability was measured after 44, 72, 96 h by ELISA. The intra-assay coefficient of variation (CV) was calculated from the difference between duplicate measurements. Minimal variation, < 1.5% at all levels, was seen using 78 serum samples stored on the same day with two different kit lot numbers (422590 and 459296). Passing and Bablok analysis demonstrated that the agreement between the two lot numbers was excellent (r > 0.99, p<0.01) with a slope of 0.87, intercept of 16.8. To evaluate equality of measurements between two different kit lot numbers, we used the Student’s t-test and found no statistically significant differences (p>0.05).

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Figure 1: Relative percentages of ADAM12s in serum samples stored at -20°C, 4°C, 18°C and 37°C

Mean ± SD (error bars) percentages of ADAM12s plotted vs. time, serum samples collected from four subjects (gestational age ranged from 15 to 20 weeks) and stored at -20°C, 4°C, 18°C, and 37°C, compared with baseline sample stored at -80°C and assumed to represent 100%. ADAM12s ranged from 1080 up to 4992 ng/mL.

Figure 2: Effect of repeated freezing and thawing of serum on ADAM12s concentration

Individual absolute ADAM12s concentrations in samples from six subjects (gestational age ranged from 10-32 weeks) versus the number of freeze/thaw cycles.
Figure 3 Influence of time to centrifugation on ADAM12s concentration

Individual absolute ADAM12s concentrations in serum samples from five subjects (gestational age ranged from 15 to 22 weeks) that were stored at 4°C and centrifuged after 1, 4, 48, 72 and 96 h following collection.

![Graph showing ADAM12s concentration over time](image)

References


