Insulin-like growth factor binding protein-1 (IGFBP-1)

Premature rupture of fetal membranes (PROM) refers to rupture of fetal membranes before onset of labor. PROM may occur at term (>37 weeks of pregnancy) or preterm (< 37 weeks of pregnancy) when it is called preterm premature rupture of fetal membranes (PPROM). PROM is relatively common as it is suspected in 10% of pregnancies. PPROM is the most common cause for preterm delivery as it is involved in 30-40% of preterm deliveries. Preterm delivery in turn is associated with high perinatal mortality as it causes roughly 30% of all perinatal deaths.

PROM is a major risk to the mother as well as to the fetus because it is also associated with an increased risk of intra-amniotic infection that may lead to neonatal sepsis. Rupture of fetal membarnes is not always associated with significant leakage of amniotic fluid and hence PROM is not always easy to diagnose and some of the historical methods do not provide adequate sensitivity or specificity.

PROM may be diagnosed using IGFBP-1 as a marker. IGFBP-1 concentration in amniotic fluid rises during preganancy and 100 to 1000 fold higher concentrations may be detected in amniotic fluid compared to human blood. Because of the high concentration even minute amounts of amniotic fluid may be detected in samples taken from vagina when PROM is suspected.

MONOCLONAL ANTIBODIES SPECIFIC TO IGFBP-1

Hytest provides antibodies for IGFBP-1 assay design. In order to verify the performance of our IGFBP-1 antibodies we tested them with 10 amniotic fluid samples from healthy women using an in-house TR-FIA-assay as follows. Amniotic fluid (AF1-AF10) samples were diluted to 1:8 except for two samples (AF4 and AF8 were diluted 1:2). As a negative control, 5 EDTA-plasma samples (NHP1-NHP5) were tested. Two combinations (C7B9-G2 and G2-C2B9) reacted with all samples. Two other combinations (G5F8-C7B9 and C7B9-G5F8) worked less efficiently with most of the samples and with two samples, AF4 and AF8, the reaction was poor. None of the combinations showed any reaction with negative controls. Figure 1 shows obtained signal with different samples.

Based on our results we can recommend two combinations for measurement of IGFBP-1 in amniotic fluid samples. Pairs G2-C7B9 and C7B9-G2 were the most sensitive pairs and highest sensitivity was reached with G2 as a solid phase antibody. Two other tested pairs, G5F8-C7B9 and C7B9-G5F8, showed less efficient or poor reaction in the tested samples. Reasons for this are currently unknown. However, it may be that C7B9 or G5F8 binding epitopes are located in regions which are cleaved off from IGFBP-1 in some conditions as has been shown in earlier studies by Lee at al. (2011) and Lee et al. (2008).

CLINICAL UTILITY

- **Premature rupture of fetal membranes (PROM)**

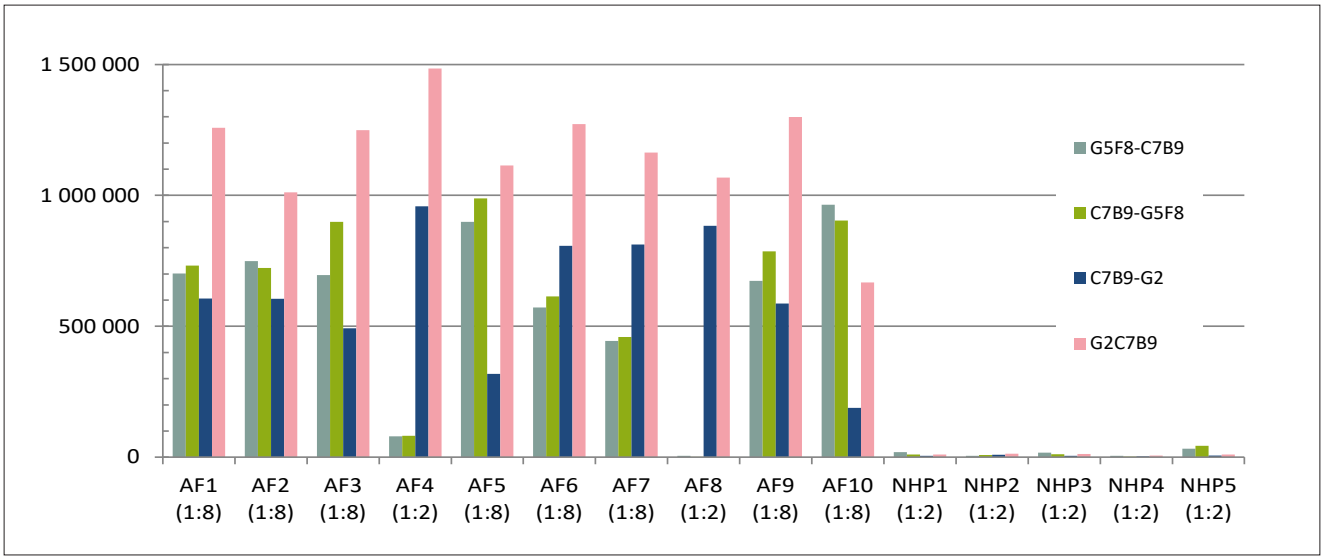

Figure 1.
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REFERENCES

1. **Lee, SE, Han, B-D, Park, I-S, Romero, R, Yoon, BH** (2008) Evidence supporting proteolytic cleavage of insulin-like growth factor binding protein-1 (IGFBP-1) protein in amniotic fluid. J. Perinat. Med. 36(4): 316-323

2. **Lee, JH, Lee, SM, Oh, KJ, Park, C-W, Jun, JK and Yoon, BH** (2011) Fragmented Forms of Insulin-Like Growth Factor Binding Protein-1 in Amniotic Fluid of Patients With Preterm Labor and Intact Membranes. Reprod. Sci., 18(9): 842-849

ORDERING INFORMATION

MONOCLONAL ANTIBODIES

Product name	Cat. #	MAb	Subclass	Remarks
Insulin-like growth factor binding protein-1 (IGFBP-1)	4IG8	G5F8	IgG1	EIA, WB
		C7B9	IgG1	EIA, WB
Insulin-like growth factor binding protein-1 (IGFBP-1) (pp12)	4I52	G2	IgG2a	EIA, WB

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