# Canadian Journal of Biotechnology

**Poster Presentation**                                                                                          **OPEN ACCESS**

**Category: Miscellaneous**                                                        **Full Scholarship Award Winner**

# Serum activin B levels as predictive biomarker for ectopic pregnancy

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## Abstract

Tubal Ectopic pregnancy remains to be a diagnostic dilemma with high morbidity and mortality. Identification of serum biomarkers for diagnosis of the above condition is warranted. Decidualization of endometrium is expected to be low in tubal ectopic pregnancy due to limitation of space in the fallopian tube. Hence tubal ectopic pregnancy is likely to have less serum levels of decidualization markers and activin B is one such marker. In the present study, we explored the utility of activin B in discriminating tubal ectopic pregnancy from intrauterine miscarriages and normal viable intrauterine pregnancy. The study included 28 in tubal Ectopic pregnancy (tEP), 31 intrauterine miscarriages (IUM) and 29 normal intrauterine pregnancies (IUP) confirmed both by clinical examination and ultrasonography. Serum activin B levels were measured at the time of admission using commercial ELISA kit. The median serum activin B levels were found to be significantly decreased in both tEP (P value=0.004) and IUM (P value =0.022) compared to normal IUP. When compared between tEP and IUM, activin B levels did not differ significantly (P value =0.648). Receiver operating curve analysis demonstrated AUC of 0.722 to discriminate ectopic pregnancy from viable IUP with levels less than 23.3 pg/ml delivering a sensitivity of 82.14%, specificity of 62.07%, negative predictive value of 77.7% and positive predictive value of 68.4%, with 95% confidence interval between 0.588 to 0.833. ROC analysis of activin B and free β-hCG demonstrated AUC of 0.722 and 0.805, respectively to discriminate tEP from viable IUP. The model including both activin B and free β-hCG improved the discriminating potential with greater AUC (0.824), and specificity (93%) than individual one. To discriminate tEP from IUM, activin B, free β-hCG and combination of both performed poorly. We conclude that serum activin B concentration is lower in tubal ectopic pregnancy, and can discriminate it from normal pregnancy with moderate accuracy. It also shows improved diagnostic potential along with free β-hCG, but cannot distinguish tEP from IUM reliably.