

ASSOCIATION OF LOW FECAL INTESTINAL ALKALINE PHOSPHATASE WITH GESTATIONAL DIABETES MELLITUS: EVIDENCE FROM A CROSS-SECTIONAL STUDY

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Background: Gestational diabetes mellitus (GDM) is a major metabolic complication of pregnancy. Beyond classical mechanisms, emerging evidence suggests that gut-derived metabolic endotoxemia may contribute to dysglycemia. Intestinal alkaline phosphatase (IAP), a key enzyme involved in maintaining gut barrier integrity and detoxifying lipopolysaccharides, has been linked to type 2 diabetes mellitus. However, its role in GDM remains largely unexplored. This study was designed to evaluate fecal IAP levels in pregnant women and examine their association with GDM. **Methods:** In this hospital-based cross-sectional analytical study, 198 pregnant women underwent screening for GDM using a 75-g oral glucose tolerance test. Participants were categorized into GDM (n=55) and normal glucose tolerance (NGT, n=143) groups according to the WHO 2013 criteria. Stool samples were collected, and IAP levels were measured using an enzymatic colorimetric assay. **Results:** Fecal IAP level was significantly lower in women with GDM than in NGT (median 23.59 vs 46.48 U/gm, $p < 0.001$). Lower IAP level remained independently associated with GDM after adjustment for body mass index and previous GDM (adjusted OR 0.98 per unit increase; 95% CI 0.97–0.99; $p < 0.001$). A graded relationship was observed between declining IAP level and GDM. ROC analysis demonstrated modest discrimination (AUC 0.676), but a threshold of approximately 65 U/gm yielded high sensitivity (89.1%) with lower specificity. **Conclusion:** Reduced fecal IAP is independently associated with GDM and may serve as a complementary biomarker for risk stratification. Prospective studies are warranted to determine its predictive value and explore its potential as a therapeutic target.

Key words: Gestational diabetes mellitus, insulin resistance, intestinal alkaline phosphatase

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