

**The Ifng antisense RNA 1 (IFNG-AS1) and growth arrest-specific transcript 5 (GAS5) are novel diagnostic and prognostic markers involved in childhood ITP.**

**Abstract:**

**Background/aim:** IFNG-AS1 is a long noncoding RNA that works as an enhancer for the Interferon-gamma (IFN- $\gamma$ ) transcript. GAS5 (growth arrest-specific 5) is a lncRNA that is associated with glucocorticoid resistance. Aberrant expressions of IFNG-AS1 and GAS5 are directly linked to numerous autoimmune disorders but their levels in childhood ITP are still obscure. This study aims to elucidate expressions of target lncRNAs in childhood ITP and their association with pathophysiology and clinical features of the disease as well as their association with types and treatment responses.

**Method:** The fold changes of target lncRNAs in blood samples from children with ITP and healthy controls were analyzed using quantitative real-time PCR (qRT-PCR).

**Results:** There were overexpressed lncRNAs IFNG-AS1 and GAS5 in serum of childhood ITP patients [(median (IQR) = 3.08 (0.2–22.39) and 4.19 (0.9–16.91) respectively, Also, significant higher IFNG-AS1 and GAS5 ( $p < 0.05$ ) were present in persistent ITP (3–12 months) [ median (IQR) = 4.58 (0.31–22.39) and 3.77 (0.87–12.36) respectively] or chronic ITP (>12 months) [ median (IQR) = 5.6 (0.25–12.59) and 5.61 (1.15–16.91) respectively] when compared to newly diagnosed <3 months patients [IFNG-AS1 median (IQR) = 1.21 (0.2–8.95), and GAS5 median (IQR) = 1.07 (0.09–3.55)]. Also, significant higher lncRNAs IFNG-AS1 and GAS5 were present in patients with partial response to treatment [IFNG-AS1 median (IQR) = 4.15 (0.94–19.25), and GAS5 (median (IQR) = 4.25 (0.81–16.91)] or non-response [IFNG-AS1 median (IQR) = 4.19 (1.25–22.39) and GAS5 median (IQR) = 5.11 (2.34–15.27)] when compared to patients who completely responded to treatment (IFNG-AS1 median (IQR) = 2.09(0.2–14.58) and GAS5 (median (IQR) = 2.51 (0.09–10.33). In addition, following therapy, the

expressions of IFNG-AS1 and GAS5 are significantly negatively correlated with platelet count.

**Conclusion:** Findings suggest that lncRNAs IFNG-AS1 and GAS5 are novel diagnostic and prognostic genetic markers for childhood ITP that can aid in a precise prediction of the disease's progress at the time of diagnosis and could be a useful tool for treatment planning.