Gyno-Genix: A Quadrupled Biosensor for the Early Screening of Multiple Gynecological Problems

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Gynecological issues affect 90% of the female population worldwide, but due to the similarity in their symptoms with other diseases, they are misdiagnosed. This project focuses on developing a risk assessment based questionnaire accompanied by a quadrupled lateral flow immunoassay (LFA) based test kit, leveraging urine samples for screening Polycystic Ovarian Syndrome(PCOS), Ovarian Cancer, Endometrial Cancer, and Uterine Fibroids. The competitive xLFIA test kit utilizes color indications on the test lines—color presence indicates a negative result, while its absence signifies a positive result, with the control line ensuring the strip's functionality. This innovative combination of biomarkers yields an approximate accuracy of 90%, along with higher sensitivity and specificity. Validation through Enzyme-linked Immunosorbent Assay (ELISA) confirmed successful binding of the coated antibody complex with antigens and the chromogenic HRP substrate, producing a discernible dark yellow color, affirming positive results in incubator reader analysis. This validation solidifies the selection of biomarkers for the non-invasive urinary metabolite screening test strip. The integration of this test kit with a comprehensive risk assessment based questionnaire will enable the evaluation and their likelihood of encountering gynecological conditions. The questionnaire is attached to a website with a special page dedicated to spreading awareness about the gynecological issues. By providing an accessible, easy-to-use, and non-invasive screening tool, this project aims to bridge the gap in early detection and timely intervention, thereby addressing the selected gynecological conditions.

Awards Won:

Fourth Award of $500