

EXPERIMENT-9

Aim: To study pregnancy diagnosis test.

Requirements: Any one marketed single use pregnancy detection kit (which contains 1 test device and 1 disposable dropper, vial), urine sample.

Principle:

Pregnancy test helps to determine whether a woman is pregnant or not. The fertilized egg secretes the hormone called Human Chorionic Gonadotropin (HCG) which is found in urine during early pregnancy. When urine sample of pregnant women is reacted with specific HCG antibodies precipitation, haemagglutination or complement fixation like reaction occur which is used as diagnostic test for pregnancy. These tests can be performed using immunological, biological and radiological techniques.

I. Immunological tests: These are commonly used and performed with the help of readily available marketed kits based on the reaction between urine HCG and specific HCG antibodies.

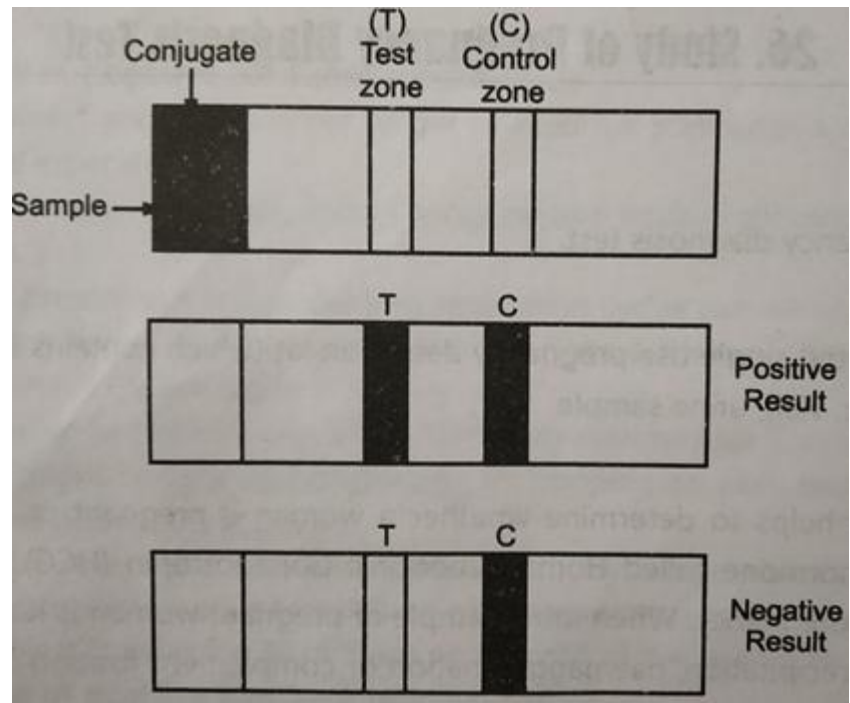
Working Principle of Immunological Test:

This test gives qualitative detection of HCG in the urine. It is based on the combination of urine HCG with monoclonal antibody-dye conjugate and polyclonal HCG antibodies present on the strip of a diagnostic kit. A urine sample is applied to the test zone of the strip. If HCG is present, antibody-HCG-antibody dye complex will be formed and a pink-purple coloured band develops. A control zone is provided to check the potency of the test reagents, flow and volume of urine added.

II. Biological tests involve injection of urine sample into various animals. They are accurate but time consuming and costly.

III. Radiological tests are performed by Radioimmunoassay (RIA) and Enzyme linked immune sorbent assay (ELISA) techniques using radio-labelled HCG and its specific antibodies.

IV. Ultrasonography is a reliable method for detecting pregnancy which uses pulses of ultrasonic waves at high frequency on various parts of uterus. The echoes (reflected waves) are displayed on the ultra sound screen and thereby confirms pregnancy. The pregnancy can be evident as early as 5th week.



Procedures:

1. Collect the first urine sample in the morning in clean container (First few ml of urine shall be discarded and then collected).
2. Add 2-3 drops of urine on strip and observe the colour change of the bands, if any, on the test and control zones.
3. Read the results as positive (i.e. development of pink or purple colour on both control and test zone) or negative (i.e. development of pink or purple colour only on control zone).

Note: False positive (test is positive but the female is not pregnant) or false negative (test is negative but female is pregnant) result is the major limitation of this test.

Sl. No	Test results	Major reason
1.	False positive	<ul style="list-style-type: none"> · Excess protein · Blood in urine · HCG production due to cancerous condition · Diuretics
2.	False Negative	<ul style="list-style-type: none"> · Too early testing · Ectopic pregnancy · Benzodiazepines

Observation:

Sl.No	Sample no	Time of Test	Observation (Colour developed/Not developed)	Inference (positive/ Negative)
			Control zone Test zone	
1				
2				
3				

Result: The pregnancy test is