

**RADIOIMMUNOASSAY KIT FOR
THYROXINE (T₄)**

(For in vitro diagnostic use only)

RIAK-5/5A



**BOARD OF RADIATION AND ISOTOPE TECHNOLOGY(BRIT)
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RIAK-5/5A

I. INTENDED USE :

RIAK-5/5A kit is to be used for the quantitative measurement of T_4 in human serum/plasma by radioimmunoassay (RIA).

II. SUMMARY AND EXPLANATION OF TEST :

Thyroxine (3,5,3', 5' - Tetraiodothyronine) is the principal hormone of the thyroid gland with molecular weight 777 Daltons. The thyroid gland concentrates inorganic iodide from plasma and chemically binds it to the amino acid tyrosine to form triiodothyronine (T_3) and thyroxine (T_4). These hormones are in peptide linkage within thyroglobulin and released into the circulatory system by proteolysis. The main effect of thyroxine is to increase the metabolic activity of most tissues of the body. Approximately 99.98% of the T_4 circulating in the blood is bound to specific proteins namely thyroxine binding globulin (TBG), thyroxine binding pre albumin and albumin. This protein binding protects the thyroid hormones from metabolism and excretion, resulting in the long half life of thyroxine (6-7 days) in circulation. Thyroid disorders are among the most common endocrine abnormalities encountered in clinical practice. Determination of serum thyroxine is one of the most important measurement in clinical investigation of thyroid function. Decreased T_4 levels have been found in hypothyroidism, chronic thyroiditis and cretinism. Elevated levels of T_4 have been associated with hyperthyroidism, hepatitis, pregnancy and exogenous administration of estrogens. Administration of certain drugs like salicylates, barbiturates, dilantin can elevate or depress thyroxine levels.

III. PRINCIPLE AND FEATURES OF THE TEST :

Unlabelled endogeneous T_4 competes with radiolabelled T_4 for the limited binding sites on the antibody made specifically for T_4 . At the end of incubation, the T_4 bound to antibody (Ag-Ab) and free T_4 are separated by the addition of polyethylene glycol. The amount bound to the antibody in the assay tube is compared with values of known T_4 standards and the T_4 concentration in the patient sample can be calculated. 8-anilino-1-naphthalene sulphonic acid (ANS) is used in this kit for displacing T_4 bound to TBG. This test is performed with 10 ul of the serum volume and covers a sample range of 0-200 ng/ml.