

# RADIOIMMUNOASSAY KIT FOR TRIODOOTHYRONINE (T<sub>3</sub>)

(For in vitro diagnostic use only)

**RIAK-4/4A**



**BOARD OF RADIATION AND ISOTOPE TECHNOLOGY (BRIT)**  
**BARC VASHI COMPLEX, SECTOR 20**  
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## **I INTENDED USE :**

RIAK-4/4A kit is to be used for the quantitative measurement of  $T_3$  in human serum/plasma by radioimmunoassay (RIA).

## **II SUMMARY AND EXPLANATION OF TEST :**

$T_3$  was first recognised as a secretory product of the thyroid gland in 1952. Following its isolation and synthesis, it soon became evident that  $T_3$  was the most potent of the calorogenic thyroactive hormones, having some 3-4 times the potency of thyroxine in terms of its ability to restore the normal metabolic activity of patients with hypothyroidism. In the thyroid gland,  $T_3$  is synthesised by coupling of monoiodotyrosine and diiodotyrosine, both already in peptide linkage in thyroglobulin, in the follicular lumen. Once released into the blood most of the thyroid hormones are immediately reversibly bound to carrier proteins, of which the most important is thyroxine binding globulin. Approximately 0.03% of  $T_4$  and 0.3% of  $T_3$  in circulation is in the physiologically active free form and the bound form acts as reservoir.

Thyroid disorders are amongst most common endocrine abnormalities encountered in clinical practice. In a profound way growth, maturation and reproduction all depend upon the functioning of the thyroid gland. The  $T_3$  level in serum has been recognised as being more sensitive than the  $T_4$  level for certain thyroid conditions. In particular,  $T_3$  levels are better indicator of hyperthyroidism than  $T_4$ . In addition, elevated  $T_3$  levels have been associated with thyrotoxicosis, toxic adenoma, Grave's disease, toxic multinodular goiter, TBG deficiency and exogenous administration of estrogens. Decreased  $T_3$  levels have been found as a result of surgical trauma, hepatic failure, renal failure and hypothyroidism.

## **III PRINCIPLE AND FEATURES OF THE TEST :**

Unlabelled endogeneous  $T_3$  competes with radiolabelled  $T_3$  for the limited binding sites on the antibody (Ab1) made specifically for  $T_3$ . The antibody is in the form of complex with second antibody (Ab2). At the end of incubation, the  $T_3$  (Ag) bound to antibody second antibody complex (Ag-Ab1-Ab2) and free  $T_3$  are separated by the addition of polyethylene glycol. The amount bound to the antibody complex in the assay tube is compared