DATA SHEET

DE16100 Calcitonin IRMA

The 125I hCalcitonin IRMA system provides direct quantitative in vitro determination of human calcitonin in human serum

Technology	: IRMA
Kit size	: 100 tests
Sample material	: serum
Sample preparation	: -
Sample volume	: 100 µl
Standard range	: 10 - 1500 pg/ml
Incubation	: 18h (RT)
Measuring system	: I-125 <740kBq
Sensitivity	: 1.5 pg/ml

Special remarks:

Introduction

Calcitonin (MW 3.4 kDa) is primarily secreted by the parafollicular C-cells of the thyroid gland. The mature peptide hormone comprises 32 amino acid residues. Calcitonin exerts its biological effect by acting on its target organs: bone, kidney and the gastrointestinal tract. The physiological role of calcitonin in bone metabolism is not fully understood and is still under investigation. It is well established that abnormally elevated levels of calcitonin are characteristic of thyroid C-cell hyperplasia and medullary thyroid carcinoma (MTC). MTC represents 5-10 % of all thyroid cancer and exists in either familial or sporadic form. Calcitonin IRMA is recommended for diagnosis and follow up of MTC and for diagnosis of preclinical cases of the familial forms of MTC. The circulating concentrations of calcitonin are low, normal values are less then 15 pg/ml, and 10 pg/ml, for males and females, respectively. In the blood the apparent calcitonin-like immunoreactivity is contributed by various calcitonin-related species, including the monomeric, dimeric and polymeric forms, as well as fragments and precursors of the parent hormone.

Principle of method

The technology uses two high affinity monoclonal antibodies in an immunoradiometric assay (IRMA) system. The ^{125}I labelled signal-antibody binds to an epitope of the calcitonin

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molecule spatially different from that recognized by the biotin-capture-antibody. The two antibodies react simultaneously with the antigen present in standards or samples, which leads to the formation of a capture antibody - antigen - signal antibody complex, also referred to as a “sandwich”. During the overnight incubation period immuno-complex is immobilized to the reactive surface of streptavidin coated test tubes. Reaction mixture is then discarded, test tubes washed exhaustively, and the radioactivity is measured in a gamma counter. The concentration of antigen is directly proportional to the radioactivity measured in test tubes. By constructing a calibration curve plotting binding values against a series of calibrators containing known amount of h calcitonin, the unknown concentration of h calcitonin in patient samples can determined.

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