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THE INVESTIGATION OF THYROGLOBULIN BINDING INDEX (TBI), KIT. I.Rubo, K.Sato, I.Morimoto, N.Yokoyama, S.Yamashita, T.
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Total T3 and T4 may not reflect thyroid function in 
patients with abnormal concentration of T3G in 
serum, and many kinds of free T3 index, such as T3 x T3 / T3, T3 / T4/T3, and T4 / T4 have been 
investigated.TBI kits of enzyme 
nmunoradiometric assay (Bioringzer), which reflect unbound T3G, and free T3 index of T3 / T3B have been 
introduced. 

We investigated TBI of enzyme 
nmunoradiometric assay (Bioringzer), which reflect unbound T3G, and free T3 index of T3 / T3B. The total numbers of 
subjects were 143, which included 50 normal 
subjects, 23 patients with Graves’ disease, 27 
patients with hypothyroidism, 27, pregnant women, 8 
patients with TBG deficiency and 8 patients with 
nonthyroidal illness.

0.01mL of serum and 1mL of T3 and T4-RD buffer were taken in an anti-T3, antibody coated assay 
tube. The tube was incubated for 2 hours and 
was incubated for 30 to 60 minutes after 
adding 1mL of ABTS solution. The optical density of 
the tube was measured at 420nm. TBI was obtained 
from the standard curve. The values for TBI were 
0.99-11.55 in normal subjects and Free T3 index of 
T3 / T3B were 3.88-9.44. This free T3 index reflects 
serum thyroid function and correlated much well with free T3, when serum T3 level is less than TKG-
capacity.

We conclude that the assay allows a 
semiquantitative determination of Tg in the presence of anti-Tg by eliminating false 
positive Tg values. Tg determination can be helpful in the diagnosis and management of 
thyroid diseases and might be useful in studies related to the autoimmune mechanisms

THYROID FUNCTION TESTS IN HOSPITALIZED 
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Patients with nontyroidal illness have 
a wide variety of abnormalities in serum 
thyroid hormone concentrations. Recent 
evidences have shown that these patients are euthyroid (euthyroid sick syndrome). 

Present study was aimed to investigate 
abnormalities in serum thyroid hormone 
concentrations in patients who hospitalized in 
our department for nontyroidal illness. 

Table 1. Results of TSH responses to TRH test in patients who were subselected to TRH test

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Serum thyroglobulin (Tg) concentration was measured by immunoradiometric assay with 
HG-TG kit (CIS-Sorin). The first and second 
incubations were performed at room 
temperature for 24 hours. The intrassay and 
interassay reproducibilities, recovery test and 
dilution test were proved to be satisfactory.

The mean Tg value was 2.95±0.9 ng/ml (150 
in 15 normal subjects). It was elevated in 
20 patients with untreated Basedow’s disease 
and 10 patients with hyperthyroidism due to 
subacute thyroiditis, being 188.5±187.1 mg/ml, respectively, 
comparing with that of normal subjects. The 40 
patients with Basedow’s disease who were treated 
by antithyroidal drugs were subdivided into 
four groups: remission group (I, n=10), 
antithyroidal medication for less than 
2 years (II, n=10), for 2-3 years (III, n=10) and 
for 4-8 years (IV, n=10). The patients in group II-IV have been treated by 
maintenance dose of MMI 5 mg per day.

The value of Tg in group I (25.9±16.2 mg/ml) 
was significantly lower than those of group 
type. The level of serum thyroid hormone 
was almost similar in each group. All sub-
jects studied had no circulating Tg auto-
antibodies as measured by anti-Tg radioim-
unoassay kit (CIS-Sorin).

The sensitivity of the assay was 3.0ng/ml 
T3 and T4 did not crossreact in the assay. 
The intra- and interassay CV were 2.9-11.9 
% and 10.4-17.1% respectively. Analytical 
recoveries were nearly quantitative for the 
serum with normal anti-Tg, while they were 
decreased for anti-Tg positive sera.

To study the effect of anti-Tg on Tg 
measurements, various amounts of anti-Tg IgG 
from a patient were added to anti-Tg 
negative sera and the assay were performed. 
The presence of anti-Tg gave rise to 
depressed values for Tg.

Serum T3 was measured in 29 normal 
subjects and untreated patients with various 
thyroid dises. The mean T3 level in 
normal subjects was 15.2±10.4 ng/ml 
ranging 3.0-40.0 ng/ml. High T3 
levels were found in 64% of 11 Graves' 
disease and 64% of 28 Hashimoto's disease 
even in the presence of anti-Tg. Serum T3 
levels were elevated in 63-68% of 16 
differentiated thyroid cancer and 31 adenoma

We conclude that the assay allows a 
semiquantitative determination of Tg in the presence of anti-Tg by eliminating false 
positive Tg values. Tg determination can be helpful in the diagnosis and management of 
thyroid diseases and might be useful in studies related to the autoimmune mechanisms.