The T-7 Value minimizes misleading thyroid results

Pregnancy, oral contraceptives, estrogens, etc., can produce misleading results by falsely listing euthyroids in either the hypothyroid or hyperthyroid range if only one test is used to determine thyroid function.

"No single laboratory test of thyroid function is diagnostically perfect for all patients."*

What's more, patients may knowingly or unknowingly give a false history. To prevent this, schedule both a T-3 test (Triosorb) and a T-4 test (Tetrasorb), which supplies the T-7 Value (T-3 x T-4) — a highly reliable result:

- When both test values are decreased, the patient is usually hypothyroid.
- When both test values are increased, the patient is usually hyperthyroid.
- When both test values are normal, the patient is usually euthyroid.
- When a patient is on oral contraceptives or is pregnant, the test values move in opposite directions.

Millions of Triosorb tests have been performed over the past 7 years and today it is considered the standard of T-3 tests.

Tetrasorb is the first diagnostic kit offering a direct measurement of thyroid function by determining serum thyroxine.

Both Triosorb and Tetrasorb are in vitro tests providing accuracy, speed and convenience. They are available in disposable kits ready for use.

By multiplying the results of both tests, you arrive at the T-7 Value—a new level of confidence in thyroid diagnosis.


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T-3 x T-4 = T-7 Value

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T-3 Diagnostic Kit

TETRASORB®
125
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Pregnant?  On the “pill”? 

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CHARCOAT T-3. No fuss, no muss, no multiple pipetting or rinsing.

You don't even have to throw in a sponge. □ What's more, CHARCOAT T-3 tests take only thirty minutes — start to finish — without complicated setups. You do everything in one little two-part vial. □ Merely pipette 0.5 ml of patient serum into each test vial, invert, incubate, centrifuge, and count the supernatant. □ But don't take our word for how simple and economical CHARCOAT T-3 kits are. Put one to the test. A standard kit (13 test vials) is only $20, and just a phone call away. Moreover, the extra long shelf-life of the CHARCOAT T-3 test kit makes quantity discount purchases practical. □ Ask about our Automatic T-3 Computer. Easy to use—no calculations. $1680 sale or lease.
The AEG Compact Cyclotron makes it possible to use new methods in the field of nuclear medicine for diagnosis, therapy, and analysis. It is specifically conceived for medical application providing compact design, ease of operation, safety and reliability, and low capital and operating costs at high beam energies and intensities. AEG also supplies all the necessary equipment for production and handling of isotopes.

In addition, this equipment can be used for activation analysis and neutron therapy. It produces high neutron flux in a preferred direction ($> 10^4 \text{ n/cm}^2 \text{ sec.}$ in a target-skin distance — TSD of 100 cm).

Bechtel/AEG can provide clients with a total program capability for a design and construction of any type of nuclear medical facility.

In North America, contact Bechtel Corporation, Bechtel Laboratory, 435 Harbor Boulevard, Belmont, California 94002. Telephone 415-764-5220. In Europe and other countries: AEG-Telefunken 8752 Grosswelzheim, Seligen-städter Strasse, Germany.

<table>
<thead>
<tr>
<th>Length</th>
<th>7'-5&quot;</th>
</tr>
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<tbody>
<tr>
<td>Width</td>
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</tr>
<tr>
<td>Height</td>
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</tr>
<tr>
<td>Total Weight</td>
<td>33 Short Tons</td>
</tr>
<tr>
<td>Connected Power</td>
<td>150 KVA</td>
</tr>
</tbody>
</table>

**FIXED ENERGY CYCLOTRON—PERFORMANCE DATA**

<table>
<thead>
<tr>
<th>Particles</th>
<th>INTERNAL BEAM</th>
<th>EXTERNAL BEAM</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Energy [MeV]</td>
<td>Intensity [$\mu$A]</td>
</tr>
<tr>
<td>Protons</td>
<td>1 — 22</td>
<td>1000</td>
</tr>
<tr>
<td>Deuterons</td>
<td>0.5 — 11</td>
<td>1000</td>
</tr>
<tr>
<td>He$^4$</td>
<td>1 — 22</td>
<td>50(100)</td>
</tr>
<tr>
<td>He$^3$</td>
<td>3 — 29</td>
<td>50(100)</td>
</tr>
</tbody>
</table>

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• Provided in varying amounts of radioactivity from 100-500 mCi per cylinder in breathing air.

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Volume 11, Number 5
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- Cost (lowest of the 3 leading products)

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WARNINGS: Radio-pharmaceutical agents should not be administered to pregnant or lactating women, or to persons less than 18 years old, unless the information to be gained outweighs the hazards. There is a theoretical hazard in acute cor pulmonale, because of the temporary small additional mechanical impediment to pulmonary blood flow. The possibility of an immunological response to albumin should be kept in mind when serial scans are performed. If blood is withdrawn into a syringe containing the drug, the injection should be made without delay to avoid possible clot formation.

PRECAUTIONS, ADVERSE REACTIONS: Care should be taken to administer the minimum dose consistent with patient safety and validity of data. The thyroid gland should be protected by prophylactic administration of concentrated iodide solution. Urticaria and acute cor pulmonale, possibly related to the drug, have occurred.

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3. It's easy: pipette 0.1 ml of serum, rotate 40 minutes, expel into a counting vial and count. No pipetting of radioactive material.

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Your result dedicated company...
Here is a completely new, fully tested device for in-laboratory transfer of Xenon-133 gas from a sealed ampule into saline solution. Developed and now introduced after over a year of comprehensive clinical use, this revolutionary new Transfer Vessel combines economy, safety and simplicity of operation into a lab unit that takes up less than 2 square feet of space. Check these features against your own requirements:

☐ **ECONOMY** — Laboratory conversion of $^{133}$Xe into saline solution can be accomplished for less than 15 cents per millicurie. Eighty (80) percent of the $^{133}$Xe is available for usage.

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☐ **SIMPLICITY** — A few convenient operational steps release a Curie (or more) of Xenon-133 from a specially designed and sealed glass ampule into saline solution. Dosages are easily drawn off by the attached syringe.

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(patent pending)
Xenon-133 in saline solution provides a method for a regional ventilation-perfusion study and is in a convenient form for both inhalation and injection techniques. The perfusion study scintiphotoogram shows the filling defect in the base of the left lung and a decrease in perfusion in the right upper lung field. The ventilation study indicates some ventilatory imbalance. Localized defects shown in the perfusion study are indicative of pulmonary emboli.

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Xenon-133 is supplied by the Radiopharmaceutical Division of NMC Corp. in specially designed glass ampules containing 1 (or more) Curie of $^{133}$Xe, for $90 per Curie. The 5.27 day physical half-life allows for realistic delivery and storage and greatly facilitates your planning schedule. This radioactive gas may be administered only by physicians licensed to dispense Xenon-133. License information may be obtained from Nuclear Medical Computer Corp. together with a descriptive brochure on the Xenon Transfer Vessel. Merely fill in the coupon or write on your institution letterhead.
The Xenon Lung Study Given Here is a Typical Presentation Obtained Using the NMC Computer with Your Camera.

The above gamma camera scintiphotos are from an Xenon lung study done on a patient who received radiation therapy to the area of the mediastinum. The perfusion part of the study was done by injecting intravenously a bolus of $^{133}$Xe (30 mCi) dissolved in saline and by having the patient hold his breath for several seconds. The distribution of $^{133}$Xe indicates which alveoli are perfused. The equilibrium part of the study was performed by having the patient breathe into a spirometer containing Xenon in air. When the patient was in equilibrium with the spirometer, he was instructed to hold his breath for several seconds while the picture was obtained. The scintiphoto from the perfusion study shows a normal distribution of radioactive Xenon.

During the study, the data (counts as a function of time) were stored by the computer on magnetic tape. This allowed an immediate in-lab computer analysis giving regional indices of perfusion. In addition, the washout of Xenon from the lung was evaluated on a regional basis.
The computer determined the perfusion index (P.I.) by normalizing the counts collected during the perfusion and equilibrium portions of the study. The perfusion index in a given region is the ratio of normalized perfusion counts to normalized equilibrium counts. Regional washout times were calculated by the computer using special curve fitting techniques.

The following perfusion indices and washout times for 10 areas of each lung were derived from the computer:

<table>
<thead>
<tr>
<th>Left Lung</th>
<th>Right Lung</th>
</tr>
</thead>
<tbody>
<tr>
<td>P.I. = .81</td>
<td>P.I. = .49</td>
</tr>
<tr>
<td>T₁/₂ = 18</td>
<td>T₁/₂ = 24</td>
</tr>
<tr>
<td>P.I. = 1.10</td>
<td>P.I. = .52</td>
</tr>
<tr>
<td>T₁/₂ = 19</td>
<td>T₁/₂ = 16</td>
</tr>
<tr>
<td>P.I. = 1.44</td>
<td>P.I. = .76</td>
</tr>
<tr>
<td>T₁/₂ = 24</td>
<td>T₁/₂ = 22</td>
</tr>
<tr>
<td>P.I. = 1.72</td>
<td>P.I. = .95</td>
</tr>
<tr>
<td>T₁/₂ = 19</td>
<td>T₁/₂ = 23</td>
</tr>
<tr>
<td>P.I. = 1.71</td>
<td>P.I. = .92</td>
</tr>
<tr>
<td>T₁/₂ = 21</td>
<td>T₁/₂ = 20</td>
</tr>
</tbody>
</table>

It can be seen from the computer analysis that perfusions to the inner margins of the lungs is decreased. The washout half-times (T₁/₂) are within the normal range indicating normal ventilation to all areas of the lung. This information was not evident prior to computer analysis.

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For more information on this amazing new system, contact Space Technology Products, P.O. Box 8439, Philadelphia, Pa. 19101. Phone (215) 962-8300.

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5:1 rectilinear field reduction capability is equivalent to increasing count rate by a factor of 25, which in turn, affords the possibility for corresponding increases in scan speed per unit area of examination.

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Brain scan: 1:1 and 2:1 right lateral. Contrast enhancement 60%. Typical speeds 250 to 350 cm/min.

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T3 testing is all very well in theory
new Thyopac-3 makes it simple in practice

Thyopac-3 has been designed to overcome the practical drawbacks of the T3 tests hitherto available — and reduce the cost of T3 testing as well. The Thyopac-3 test is uniquely quick and easy to perform. Just add 0.1ml serum to vial, mix for 10 minutes, allow to settle, withdraw 1ml supernate and count. That’s all. No need for temperature control or washing; only one count per test; and the sample for counting is withdrawn at equilibrium. Since the sample is a liquid, a variety of conventional counters may be used.

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Space will be provided in each issue of THE JOURNAL OF NUCLEAR MEDICINE to publish one case report.

The text of the manuscript should not exceed 1,200 words. Authors may submit (1) two illustrations, (2) two tables or (3) one illustration and one table. An additional 400 words of text may be submitted if no illustrations or tables are required.

The manuscript should be mailed to the Editor, Belton A. Burrows, University Hospital, Dept. of Medicine, 750 Harrison Ave., Boston, Mass. 02118.
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(name & title)

for an appointment.

☐ Please send relevant small hospital case histories and other information on starting a Department of Nuclear Medicine.

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The reagents contained in the HGH immunoassay kit are intended for use in a "Double Antibody Method" which basically resembles that described by Hales and Randle for the immunoassay of insulin. According to this method the complex of HGH and anti-HGH antibody is rendered insoluble by a second antibody. The precipitate is separated from free HGH by filtration.

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Volume 11, Number 5

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October 12–17, 1970
November 9–14, 1970
December 7–12, 1970

1971
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February 8–13, 1971
March 8–13, 1971
April 5–10, 1971
May 10–15, 1971
June 7–12, 1971
September 13–18, 1971
October 11–16, 1971
November 8–13, 1971
December 6–11, 1971

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