The Most Complete Product Line
The recent acquisition of the Cintichem® division of Union Carbide gives Medi-Physics the most complete product line in nuclear medicine today.

Convenience and Location
Medi-Physics has five production and distribution facilities located near major population centers across the country. Short-lived products such as Sodium Iodide I 123 and MPI Krypton Kr 81m Gas Generators can be made available to most of the country from these production facilities.

Innovative Research
Medi-Physics has ongoing basic research in heart metabolism, heart perfusion and brain perfusion. These projects, among others, represent our investment and commitment to the future of nuclear medicine.
• **Expanding Capacity**
Medi-Physics has 3 producing cyclotrons now, with a fourth cyclotron scheduled to be producing in January 1982. This new cyclotron will increase our supply of basic products and will enable us to routinely deliver the Krypton Generator in the Midwest in early 1982.

• **Service You Can Count On**
Medi-Physics has been supplying short-lived products for over 10 years. Our organization is designed for, and dedicated to, daily production and delivery of quality radiopharmaceuticals. Our technical sales representatives can provide information on our products and nuclear medicine in general.

5801 Christie Ave., P.O. Box 8684, Emeryville, CA 94608, (415) 658-2184. (In CA) (800) 772-2477. (Outside CA) (800) 227-0492.
multicrystal count rates with single-crystal image quality

Another unique feature of the Apex Line
In the practice of modern Nuclear Medicine, physicians have learned that a camera’s major diagnostic advantage is often negated by a parallel disadvantage. High count rate is one such case. Until Apex, high count rates were achievable only with multicrystal cameras—at the expense of image quality. Only Elscint’s Apex Line provides count rates as high as 500,000 CPS and resolutions as fine as 1.8mm bars (Apex 215M).

*Elscint Inc.*
138-160 Johnson Avenue, Hackensack, N.J. 07602, U.S.A.
Call Toll Free: 800-631-1694

**High Count Rates—The Clinical Need**

As Nuclear Medicine techniques become more sophisticated, they require higher count rates. Cardiac first-pass studies, for example, can only be effectively accomplished with count rates exceeding the limitations of most present day gamma cameras. Apex systems, however, do perform these studies—with remarkable image clarity.

**Some Impressive Apex Qualities**

The remarkable *Count Rate* performance of the Apex Line is supported by a high *Dynamic Frame Rate* of 64 FPS for 64x64 pixels, and a *Multigated Frame Rate* of 64 frames per heart cycle for $64^2$ matrix.
Who operates your clinical imaging system?

You do.

That's why you want a system that's easy to use and easy to operate in any clinical environment. That's why you want a system based on 10 years of experience in clinical imaging—an A² Clinical Imaging System.

Medtronic Medical Data Systems has combined the features that make your work easier:

- a uniquely efficient menu structure
- a storage and retrieval system that calls your patients by name and study
- a method for automating often-performed procedures with a single command
- a proven history of expanding capabilities as technology changes

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Designed for the clinician and easy to use.

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Medical Data Systems' products, hardware and software, are tools for discrete patient evaluation and do not come in contact with and cannot cause direct injury to the patient. Refer to the operation manual and instructions accompanying the acquisition device for further information on its use. To ensure proper clinical results, a Medical Data Systems product must be used under the direction of, and using procedures verified by, a qualified physician.

See just how easy we are... Visit our booth, #1229-30, at the 26th Annual Meeting of the American Institute of Ultrasound in Medicine, August 17-21, in San Francisco.

Medtronic Medical Data Systems

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NEN now offers 24-hour precalibration on most shipments of thallium-201—with all the advantages of greater activity, lower cost per mCi and scheduling convenience.

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This provides you with a reliable product supply and a uniformly high quality product.

INCORPORATE THE FOLLOWING ADVANTAGES:
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Technetium 99m Generators are produced in total at one domestic production site which:

- Possesses its own Nuclear Reactor for the production of high specific activity Fission Products Mo 99,
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- loads Fission Product Mo 99 onto columns,
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- ships Generators directly to the user

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CintiChem® Technetium Tc 99m Generators are jointly manufactured by Union Carbide Corporation and CintiChem® Inc., a wholly owned subsidiary of Medi-Physics, Inc.
TechneScan® MAA
Technetium Tc 99m Albumin Aggregated Kit

The right size particles

Well tolerated by patients, it provides excellent images

Mallinckrodt's MAA typically has a particle size of 10 to 40 microns. This controlled particle size range, plus the fact that there is no tendency to agglomerate, gives you excellent lung perfusion images. TechneScan® MAA is well-tolerated and excretion is virtually complete in 24 to 48 hours, with no evidence of antigenicity to date. This convenient one-step procedure can be prepared in 20 minutes.

For more information about the TechneScan MAA Kit, call your Mallinckrodt representative.

For orders call:
800-325-3688 (In Missouri, 314-344-3680 collect)
For technical assistance, it is 800-325-8181
(In Missouri, 314-895-2405 collect)

See brief summary on following page.

THE MALLINCKRODT COMMITMENT
to Nuclear Medicine

MALLINCKRODT, INC., Post Office Box 5840, St. Louis, MO 63134

© Mallinckrodt, Inc. 1981
Warnings: The possibility of allergic reactions should be considered in patients who receive multiple doses of Technetium Tc 99m MAA. Theoretically, the intravenous administration of particulate material such as radioactive colloids may cause a temporary small mechanical impediment to blood flow. While this effect is probably physiologically insignificant in most patients the administration of aggregated albumin is probably a hazard in patients with known or suspected pulmonary or other states of severely impaired pulmonary blood flow. This radiopharmaceutical preparation should not be administered to persons with known or suspected pulmonary or other states of severely impaired pulmonary blood flow. If the effect expected in nature, of children/caregiving capability should be performed during the first few (approximately 10) days following the onset of menopause.

Precautions: In cases of right-to-left cardiac shunt, additional risk may exist due to the rapid entry of aggregated albumin particles into the systemic circulation.

The contents of the Technetium Tc 99m MAA Kit are not radioactive. However, after the sodium pertechnetate Tc-99m is added, adequate shielding of the final product is necessary to prevent exposure to personnel unless the expected benefits to be gained outweigh the potential risks.

For the contents of the Technetium Tc 99m MAA Kit are sterile and pyrogen-free. It is recommended that the solution is mixed immediately before use and adhered to strict aseptic procedures during preparation of the radiopharmaceutical product.

Technetium Tc-99m is a suspension in sodium pertechnetate Tc-99m that provides an aqueous suspension of technetium Tc-99m albumin aggregates injection, with a labeling efficiency of 90% or greater.

Physical characteristics: Technetium Tc-99m decays by isomeric transition with a physical half-life of 6.02 hours. Particles that are useful for detection and imaging are listed in Table 1.

Table 1. Principal Radiation Emission Data

<table>
<thead>
<tr>
<th>Radiation</th>
<th>Mean % Disintegration</th>
<th>Mean Energy (keV)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gamma-2</td>
<td>88.96</td>
<td>140.5</td>
</tr>
</tbody>
</table>

External Radiation: The specific gamma ray constant for technetium Tc-99m is 0.8 R/mc•hr at 1 cm. The first half value thickness of lead (Pb) for technetium Tc-99m is 0.2 mm. A calculation of the attenuation thickness of the radiation emitted by this radionuclide that results from the interaction of various thicknesses of Pb is shown in Table 2. For example, the use of 2.7 mm of Pb will decrease the external radiation exposure by a factor of about 1000.

Table 2. Radiation Attenuation by Lead Shielding

<table>
<thead>
<tr>
<th>Shield Thickness (Pb) mm</th>
<th>Coefficient of Attenuation</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.2</td>
<td>0.95</td>
</tr>
<tr>
<td>0.5</td>
<td>0.9</td>
</tr>
<tr>
<td>0.75</td>
<td>0.85</td>
</tr>
<tr>
<td>1.0</td>
<td>0.8</td>
</tr>
<tr>
<td>1.5</td>
<td>0.75</td>
</tr>
<tr>
<td>2.0</td>
<td>0.7</td>
</tr>
<tr>
<td>2.5</td>
<td>0.65</td>
</tr>
<tr>
<td>3.0</td>
<td>0.6</td>
</tr>
<tr>
<td>3.5</td>
<td>0.55</td>
</tr>
<tr>
<td>4.0</td>
<td>0.5</td>
</tr>
</tbody>
</table>

To correct for possible effects of this radionuclide, the fractions that remain at selected time intervals after the time of calibration are shown in Table 3.

Table 3. Physical Decay Chart: Technetium Tc-99m Half-Life: 6.02 Hours

<table>
<thead>
<tr>
<th>Hours</th>
<th>Fraction Remaining</th>
<th>Remaining Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>1.000</td>
<td>0.989</td>
</tr>
<tr>
<td>2</td>
<td>0.974</td>
<td>0.968</td>
</tr>
<tr>
<td>4</td>
<td>0.951</td>
<td>0.950</td>
</tr>
<tr>
<td>6</td>
<td>0.928</td>
<td>0.927</td>
</tr>
<tr>
<td>8</td>
<td>0.920</td>
<td>0.920</td>
</tr>
<tr>
<td>10</td>
<td>0.912</td>
<td>0.912</td>
</tr>
<tr>
<td>12</td>
<td>0.905</td>
<td>0.905</td>
</tr>
<tr>
<td>14</td>
<td>0.902</td>
<td>0.902</td>
</tr>
<tr>
<td>16</td>
<td>0.900</td>
<td>0.900</td>
</tr>
</tbody>
</table>

Clinical pharmacology: Within 1-5 minutes of intravenous injection, over 90 percent of the technetium Tc-99m aggregated albumin particles are trapped in the arterioles and capillaries of the lung. Organ selectivity is a direct result of particle size. Below 1-10 microns, the albumin aggregates are taken up by the reticuloendothelial system. Above 10-15 microns, the aggregates become lodged in the lung capillaries by a purely mechanical process. Distribution of aggregated albumin in the lung is a function of regional pulmonary blood flow in animal tissue distribution studies, measurements of retained activity showed a lung to liver ratio of about 1/1 within the first thirty minutes. Elimination of the technetium Tc-99m aggregated albumin from the lungs occurs with a biological half-life of about 0.5 hours. Cumulative urinary excretion studies show an average of about 75% elimination of the injected Tc-99m dose 24 hours post-injection. Elimination of the technetium Tc-99m aggregated albumin from the normal and abnormal human lungs occurs with a biological half-life of 10.2 hours. The effective half-life was estimated to be 3.6 hours for the lung. Data for half-life are available on request.

Indications and usage: Technetium Tc 99m MAA is indicated for scintigraphic imaging of the lungs as an adjunct to other diagnostic procedures whenever information about pulmonary circulation is desired.

Contraindications: Technetium MAA Tc 99m should not be administered to patients with known pulmonary hyperpermeability. The use of Technetium Tc-99m MAA Tc 99m is contraindicated in patients with a history of hypersensitivity reactions to products containing human serum albumin.

In cases of right-to-left cardiac shunt the number of aggregated albumin particles administered per dose should be reduced to the minimum feasible.

The patient dose should be measured by a suitably calibrated radiation monitor by personnel trained in radiation administration. It is also recommended that the radiochemical purity be checked. Resuspension of the remaining aggregated albumin is necessary by repeated inversion of the syringe immediately prior to injection. Technetium Tc 99m is injected intravenously without aspirating, over a 20-30 second interval with the patient in the supine position. If blood is drawn into the syringe, any unnecessary delay prior to injection may lead to clot formation in the syringe. Do not shake the flush solution after the dose has been withdrawn. It is recommended that the Technetium Tc 99m not be injected through intravenous tubing because of the occasional observation of “hot spots” in the lung.

Radiation dosimetry: The estimated absorbed radiation doses from an intravenous injection of 4 milliequivalents of Technetium Tc 99m are shown in Table 4.

Table 4. Absorbed Radiation Dose

<table>
<thead>
<tr>
<th>Tissue</th>
<th>mrad/4-hr</th>
</tr>
</thead>
<tbody>
<tr>
<td>Liver</td>
<td>1.44</td>
</tr>
<tr>
<td>Spleen</td>
<td>0.116</td>
</tr>
<tr>
<td>Kidney</td>
<td>0.072</td>
</tr>
<tr>
<td>Thyroid</td>
<td>0.025</td>
</tr>
<tr>
<td>Bladder</td>
<td>0.032</td>
</tr>
<tr>
<td>Bowel</td>
<td>0.544</td>
</tr>
<tr>
<td>Ovaries</td>
<td>0.036</td>
</tr>
<tr>
<td>Stomach</td>
<td>0.028</td>
</tr>
<tr>
<td>Total</td>
<td>0.048</td>
</tr>
</tbody>
</table>

How supplied: Technetium Tc 99m MAA Kit Catalog Number: Technetium Tc 99m Albumin Aggregated Kit (Lyophilized)

| Kit Contents | 25 – Reagent Vials for the preparation of Technetium Tc-99m Albumin Injection Reaction Vial for the preparation of Technetium Tc-99m Albumin Injection 2.0 mg Aggregated Albumin Human 0.5 mg Aggregated Albumin Human 125 µL Sodium Chloride (Dihydrogen) 80 µL Lactose 24 µg Sucrose Acid 1.4 mg Sodium Acetate Hydrochloric Acid or Sodium Hydroxide is added for pH adjustment. Each unit is shipped at 8°C and contains 40 aggregated albumin particles.

Technetium Tc 99m MAA contains no preservatives, after reconstitution, the shielded vial should be stored at 2°C to 8°C. Included in each package is one (1) package insert and 5 radioactivity information tags.

Procedures: Procedural precautions: Solutions of sodium pertechnetate Tc-99m which contain oxidizing agents (e.g., sodium hypochlorite or hydrogen peroxide) should NOT BE USED.

Radiopharmaceuticals should be used only by physicians who are qualified or trained in the use of radionuclides and whose experience and training have been approved by the appropriate governmental agency authorized to license the use of radiopharmaceuticals.

Adverse reactions: The literature contains reports of deaths occurring after the administration of aggregated albumin to patients with pre-existing severe pulmonary hypertension. Instances of hemodynamic or idiopathic respiratory distress syndrome preparation of aggregated albumin albumin injection have been reported. Hypersensitivity reactions are possible whenever protein-containing materials such as technetium Tc-99m albumin aggregated injection are used in man. Epinephrine, antihistamines and corticosteroids should be available for use. All transfer and vial stopper entries must be done using aseptic technique.

Procedure: Note: The radiopharmaceutical material should be at all times during preparation.

1. A reaction vial is removed from the refrigerator and approximately 5 minutes are allowed for the contents to come to room temperature.

2. Add a “Caution – Radioactive Material” label (string tag) to reaction vial.

3. Place reaction vial in a lead sheet shielded with a lid and having a wall thickness of at least 0.3 in. Do not remove reaction vial from shield except to insert contents prior to administration. Use adequate shielding to prevent exposure to personnel.

4. Sodium pertechnetate Tc-99m solution (4 mL) is added to the Technetium Tc-99m MAA, 4 mL of sodium Fluoride-Ultra-Technotag™ FM Generators, New England Nuclear’s Technetium-99m Generator and Squibb’s Minitec® Generator. Other sources of technetium Tc-99m can be used if the user has demonstrated that they are compatible with Technetium Tc-99m use.

5. The reaction vial is gently agitated for a few seconds and allowed to stand for 15 minutes at room temperature.

6. Sodium pertechnetate Tc-99m solution (4 mL) is added to the Technetium Tc-99m MAA, 10 mL of the Technetium Tc-99m MAA, 10 mL of sodium Fluoride-Ultra-Technotag™ FM Generators, New England Nuclear’s Technetium-99m Generator and Squibb’s Minitec® Generator. Other sources of technetium Tc-99m can be used if the user has demonstrated that they are compatible with Technetium Tc-99m use.

7. The reaction vial is gently agitated for a few seconds and allowed to stand for 15 minutes at room temperature.

8. The radioactivity concentration of the Technetium Tc-99m MAA and Shielded vial is filled in the appropriate information on the string tag.

9. The final vial is tested and the contents of the vial should be gently agitated sufficiently to effect homogeneous suspension of the aggregated albumin. Store shielded reaction vial at 2°C to 8°C when not in use and discard after 8 hours from the time of reconstitution.

This reagent kit is approved for use by persons licensed by the U.S. Nuclear Regulatory Commission pursuant to Section 35.43 and 35.100 Group III of 10 CFR 35 or under licenses of Agreement States.
A superior new bone scanning agent

Osteoscan-HDP represents a significant technological advance in bone scanning agents. Its unique new active ingredient, hydroxymethylene diphosphonate (HDP), provides higher bone uptake than MDP-based agents for clear, definitive scans and excellent lesion detection.

Bone uptake superior to MDP

HDP shows unusually high adsorption to bone. In a clinical comparison, Osteoscan-HDP averaged 21% higher bone uptake than the MDP-based agent.¹

Scan data:
The two scans above are of a 56-year-old female patient with breast cancer. Scan: abnormal activity in right ischial ramus. Instrument: General Electric MaxiCamera™ 535; total counts: 2000K; dose: 20.6 mCi; 5'5", 175 lb; dose-to-image time: 2.25 hours
Notice excellent bone delineation in this obese patient.

Rapid blood clearance

No bone agent clears the blood faster. Only 6% of Osteoscan-HDP remains in the blood two hours after injection.² Osteoscan-HDP's rapid blood clearance contributes to the overall quality of the image and permits flexibility in scheduling patient scans from 1 to 4 hours post-injection.

References:
Unexcelled image quality

Osteoscan-HDP's high bone uptake and rapid blood clearance permit clear visualization of skeletal detail even in difficult-to-scan elderly patients.

See for yourself

To order Osteoscan-HDP, or for further information, call or write Procter & Gamble, Professional Services, P.O. Box 85507, Cincinnati, Ohio 45201, (513) 977-5547.

Please see the following page for a brief summary of prescribing information.

High lesion sensitivity

HDP offers a high tumor-to-normal bone ratio. This results in high resolution scans capable of demonstrating subtle skeletal metastases and fractures with no sacrifice in overall image quality.

Scan data:
The two scans above are of a 79-year-old male patient with adenocarcinoma-prostate.
Scan: multiple lesions. Instrument: Picker 4/15 Gamma Camera; information density: 3000; dose: 15 mCi; dose-to-image time: 3 hours
IVP revealed mass in right kidney causing retention.
INDICATIONS AND USAGE

OSTEOSCAN-HDP (Technetium Tc99m Oxidronate Kit) is a diagnostic skeletal imaging agent used to demonstrate areas of altered osteogenesis.

CLINICAL PHARMACOLOGY

During the 24 hours following injection, Technetium Tc99m-labeled OSTEOSCAN-HDP is rapidly cleared from blood and other non-osseous tissues and accumulates in the skeleton and urine. In humans, blood levels are about 10% of the injected dose at one hour post-injection and continue to fall to about 6%, 4%, and 3% at 2, 3, and 4 hours respectively. When measured at 24 hours following its administration, skeletal retention is approximately 50% of the injected dose. OSTEOSCAN-HDP exhibits its greatest affinity for areas of altered osteogenesis and actively metabolizing bone.

CONTRAINDICATIONS

None known.

WARNINGS

This class of compounds is known to complex cations such as calcium. Particular caution should be used with patients who have, or who may be predisposed to hypocalcemia (i.e., alkalosis).

PRECAUTIONS

General

Contents of the vial are intended only for use in the preparation of Technetium Tc99m Oxidronate and are NOT to be administered directly to the patient. Technetium Tc99m Oxidronate should be formulated within eight (8) hours prior to clinical use. Optimal imaging results are obtained one to four hours after administration.

Technetium Tc99m Oxidronate as well as other radioactive drugs, must be handled with care, and appropriate safety measures should be used to minimize radiation exposure to the patients consistent with proper patient management. Radiopharmaceuticals should be used only by physicians who are qualified by specific training in the safe use and handling of radionuclides and whose experience and training have been approved by the appropriate government agency who has authorized the use of radionuclides.

To minimize radiation dose to the bladder, the patients should be encouraged to drink fluids and to void immediately before the examination and as often thereafter as possible for the next four to six hours.

Carcinogenesis, Mutagenesis, Impairment of Fertility

No long-term animal studies have been performed to evaluate carcinogenic potential or whether Technetium Tc99m Oxidronate affects fertility in males and females.

Pregnancy — Category C

Animal reproduction studies have not been conducted with Technetium Tc99m Oxidronate. It is also not known whether Technetium Tc99m Oxidronate can cause fetal harm when administered to a pregnant woman or can affect reproduction capacity. Technetium Tc99m Oxidronate should be given to a pregnant woman only if clearly needed. Ideally examinations using radiopharmaceuticals, especially those elective in nature, of a woman of childbearing capability should be performed during the first few (approximately 10) days following the onset of menses.

Nursing Mothers

Technetium Tc99m is excreted in human milk during lactation, therefore formula feedings should be substituted for breast feedings.

Pediatric Use

Safety and effectiveness in children have not been established.

ADVERSE REACTIONS

Although adverse reactions have not been reported that are specifically attributable to the use of Technetium Tc99m Oxidronate, allergic dermatological manifestations (erythema) have been infrequently reported with similar agents.

DOSEAGE AND ADMINISTRATION

General Instructions

The recommended adult dose of Technetium Tc99m-labeled OSTEOSCAN-HDP is 15 mCi with a range of 10 to 20 mCi. The activity of each dose should be measured by a suitable radiation calibration system just prior to administration. The dose should be given intravenously by slow injection. For optimal results imaging should be done 1-4 hours post-injection.

HOW SUPPLIED

OSTEOSCAN-HDP is supplied as a lyophilized powder packaged in vials. Each vial contains 2.0 mg oxidronate sodium and 0.16 mg stannous chloride as active ingredients, and 0.56 mg gentisic acid as a stabilizer. Kits containing 5 or 30 vials are available. The NDC number for this product is NDC 37000-403-01. The drug can be stored at room temperature both prior to and following reconstitution with ADDITIVE-FREE sodium pertechnetate Tc99m.

For additional product information, call (513) 977-5547 or write: Procter & Gamble, Professional Services, P.O. Box 171, Cincinnati, OH 45201.

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- Automatic wall detection to define left ventricle and calculating the ejection fraction
- Cardiac shunt detection and quantitation of QP:QS ratio
- First transit cardiac studies

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Virginia Beach 499-3159 • Richmond 643-1064 • Baltimore 392-0420 • Washington D.C. 686-0742
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From acquisition through processing of information, SCINTIVIEW’s uniquely dedicated console computer approach to nuclear medicine combines unprecedented ease of operation... with proven clinical performance.

A wide variety of relevant clinical programs cover a complete range of nuclear medicine applications. Seven programs are specifically developed for nuclear cardiology and provide the user with immediate entry into this most dramatic advance in diagnostic imaging. Simple, easy to read English language touch panel lets you concentrate on the procedures, not the computer.

And, SCINTIVIEW is compatible with virtually any Anger camera, to permit instantaneous upgradeability. Add on a MICRO DOT IMAGER for efficient documentation and you’re assured the flexibility, accuracy, and speed you expect in an advanced system that’s part of a total approach to nuclear imaging.

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YOUR FINGERTIPS.
INCLUDING
TOMORROW.

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Just as you can add a total ECT package to the Dyna Camera Series 5, you can add future innovations as they come on stream. Because upgradability is a programmed design concept, your Dyna Camera never becomes obsolete... always remains cost-effective... provides total clinical capability... both today and tomorrow.

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MDP-SQUIBB™

TECHNETIUM Tc 99m MEDRONATE KIT

STABLE FOR 24 HOURS

—May be used up to 24 hours after reconstitution
—20 mg of active ingredient...each vial contains 20 mg medronic acid
—Formula developed in the pharmaceutical laboratories of the Squibb Institute for Medical Research
—Images of unusual clarity
Rapid soft tissue and blood clearance...optimal results can be obtained 1 to 4 hours after administration

- Excellent labeling efficiency
- Simple 2-step procedure
- Kit contains 10 reaction vials

A 55-year-old female was administered 15 mCi of technetium Tc 99m medronate prepared with MDP-SQUIBB (Technetium Tc 99m Medronate Kit). Two hours postinjection a whole body scan was obtained on a scintillation camera.

A 51-year-old female was injected with 20 mCi of technetium Tc 99m medronate prepared with MDP-SQUIBB (Technetium Tc 99m Medronate Kit). Three hours later scan was obtained on a tomographic scanner.

See next page for brief summary.
MDP-SQUIBB™ Technetium Tc 99m Medronate Kit
For Diagnostic Use

DESCRIPTION: Each 10 ml capacity reaction vial contains a sterile, nonpyrogenic lyophilized powder prepared from 20 mg medronic acid, 11 mg sodium hydroxide, and 0.25 mg tin as fluoride; the product does not contain a preservative. When sterile, nonpyrogenic sodium pertechnetate Tc 99m is added to the vial, technetium Tc 99m medronate is formed.

CONTRAINDICATIONS: None known.

WARNINGS: This class of compounds is known to complex cations such as calcium. Particular caution should be used with patients who have or who may be predisposed to hypocalcemia (i.e., alkalosis).

Preliminary results indicate impairment of brain scans using sodium pertechnetate Tc 99m injection which have been preceded by a bone scan using an agent containing stannous ions. The impairment may result in false-positive or false-negative brain scans. It is recommended, where feasible, that brain scans precede bone imaging procedures. Alternatively, a brain-imaging agent such as technetium Tc 99m pentetate may be employed.

PRECAUTIONS: General—Contents of the reaction vial are not radioactive and are intended only for use in the preparation of technetium Tc 99m medronate and are NOT to be administered directly to the patient.

Technetium Tc 99m medronate as well as other radioactive drugs must be handled with care, and appropriate safety measures should be used to minimize radiation exposure to the patient and occupational workers consistent with proper patient management.

To minimize radiation exposure to the bladder, the patient should be encouraged to drink fluids and to void immediately before the examination and as often thereafter as possible for the next four to six hours.

Technetium Tc 99m medronate should be administered within 24 hours of its preparation; for optimal results, the dose should be administered as soon as possible following preparation of technetium Tc 99m medronate. Optimal imaging results are obtained one to four hours after administration.

Radiopharmaceuticals should be used only by physicians who are qualified by training and experience in the safe use and handling of radionuclides and whose experience and training have been approved by the appropriate government agency authorized to license the use of radionuclides.

Carcinogenesis, Mutagenesis, Impairment of Fertility—No long-term animal studies have been performed to evaluate carcinogenic potential or whether technetium Tc 99m medronate affects fertility in males or females.

Pregnancy Category C—Animal reproduction studies have not been conducted with technetium Tc 99m medronate. It is also not known whether technetium Tc 99m medronate can cause fetal harm when administered to a pregnant woman or can affect reproduction capacity. Technetium Tc 99m medronate should be given to a pregnant woman only if clearly needed.

Ideally, examinations using radiopharmaceuticals, especially those elective in nature, of a woman of childbearing capability should be performed during the first few (approximately 10) days following the onset of menses.

Nursing Mothers—Technetium Tc 99m is excreted in human milk during lactation; therefore, formula-feedings should be substituted for breast-feedings.

Pediatric Use—Safety and effectiveness in children have not been established.

ADVERSE REACTIONS: No adverse reactions specifically attributable to the use of technetium Tc 99m medronate have been reported.

For full prescribing information, consult package insert.

HOW SUPPLIED: In packages of 10 reaction vials.

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THE MALLINCKRODT COMMITMENT to Nuclear Medicine

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For maximum convenience and safety, Gepco also provides complete, disposable radiation-precaution care packs. Each consists of top and bottom sheets, pillow case, bath towel and wash cloth. Patient gowns and robes are also available.

HOSPITAL-TESTED AND APPROVED

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Don't be misled by the numbers. Kits calibrated against the old standard are really less sensitive than they appear. For example, a claim of 5 mIU/ml sensitivity translates into about 10 mIU/ml sensitivity, according to the 1st IRP. And a pregnancy screening procedure that supposedly picks up positives at 30 mIU/ml actually only detects positives above 60 mIU/ml.

We're twice as sensitive as we look. The sensitivity of the GammaDab β-HCG RIA Kit is 2 mIU/ml in terms of the 1st IRP (1 mIU/ml in terms of the 2nd IS). The cut-off for our screening procedure is 25 mIU/ml, or 12.5 mIU/ml according to the old standard. This lower cut-off level can be significant when early pregnancy detection is vital, as in cases of suspected ectopic pregnancy or threatened abortion.

Find out more about our kit. It is not only sensitive, it is also convenient. Write or call for more information or an evaluation kit. We'll also be happy to tell you more about the double standard.

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NUCLEAR MEDICINE

Between July and December, 1981, NBS will have available the following solution Standard Reference Materials:

<table>
<thead>
<tr>
<th>SRM No.</th>
<th>Radionuclide</th>
<th>Approximate Availability Date</th>
<th>Approximate Total Activity at time of Dispatch</th>
</tr>
</thead>
<tbody>
<tr>
<td>4400L-D</td>
<td>Chromium-51</td>
<td>July, 1981</td>
<td>150 @Ci</td>
</tr>
<tr>
<td>4409L-D</td>
<td>Selenium-75</td>
<td>August, 1981</td>
<td>100 @Ci</td>
</tr>
<tr>
<td>4410H-G</td>
<td>Technetium-99m</td>
<td>September, 1981</td>
<td>200 @Ci</td>
</tr>
<tr>
<td>4406L-E</td>
<td>Phosphorus-32</td>
<td>October, 1981</td>
<td>100 @Ci</td>
</tr>
<tr>
<td>4407L-G</td>
<td>Iodine-125</td>
<td>December, 1981</td>
<td>100 @Ci</td>
</tr>
</tbody>
</table>

U.S. Department of Commerce
National Bureau of Standards

These SRM's will consist of the radionuclide and carrier in approximately 5 grams of solution in a flame-sealed borosilicate-glass ampoule.

All orders must be placed before the first day of the month in which the SRM will be available. Shipments are made air freight, shipping charges collect.

*There will be no overseas shipments of technetium-99m.

For further information, and current prices, call or write to:

Miss P.A. Gelfeld
Radioactivity Group
Room C114, Building 245
National Bureau of Standards
Washington, D.C. 20234
(301) 921-2665

Nuclear Medicine Modular Systems

Kewaunee Nuclear Medicine Modular Systems consist of lead shielded modules specifically designed with a "Work-Flow" pattern for Receiving, Holding and Storage, Reagent Preparation, Inventory and Dispensing of Radiopharmaceuticals and Decay Storage.

The Kewaunee design offers a complete Radiopharmacy Systems Concept for Nuclear Medicine Departments. Lead shielding within the system provides for personnel safety from radiation. Maximum efficiency is obtained through the "Work-Flow" pattern concept.

Please send literature.  Please have representative call.

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Halley's Comet, which was last seen in 1910, will return from the outer reaches of the solar system and be visible again in 1986. As it orbits around the sun, this spectacular comet will be traveling at speeds of up to 185 miles per second.

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Syncor International Corporation
12847 Arroyo Street
Sylmar, California 91342

Please refer to the brief prescribing information on the following page.
AN-Sulfur Colloid
Technetium Tc 99m Sulfur Colloid Kit
For complete prescribing information, consult the package insert, a summary of which follows.

Indications and Usage. Technetium Tc 99m Sulfur Colloid is used as an agent for imaging areas of functioning reticuloendothelial cells in the liver, spleen and bone marrow.

Contraindications. None known.

Warnings. The contents of the two unit-dose syringes are intended only for use in the preparation of Technetium Tc 99m Sulfur Colloid and are not to be directly administered to the patient. The contents of the kit are not radioactive, however, after the Sodium Pertechnetate Tc 99m is added, adequate shielding must be maintained.

Precautions. Radiopharmaceuticals should be used only by physicians who are qualified by specific training in the safe use and handling of radionuclides and whose experience and training have been approved by the appropriate government agency.

The components of the kit are sterile and non-pyrogenic. The user must follow the directions carefully and adhere to strict aseptic procedures during preparation.

The stability of the colloidal preparation may be decreased in the presence of polyvalent cations, resulting in the agglomeration into larger particles which are likely to be trapped by the pulmonary capillary bed following intravenous injection. It is recommended that Sodium Pertechnetate Tc 99m solutions containing more than 10 micrograms/ml of aluminum ion not be used for reagent preparation. The pertechnetate solution must also be free of any traces of oxidizing agents

Technetium Tc 99m Sulfur Colloid is physically unstable and the particles will settle with time. Failure to agitate the vial adequately before use may result in non-uniform distribution of radioactivity. Use within 6 hours after preparation.

No long-term animal studies have been performed to evaluate carcinogenic potential or whether Technetium Tc 99m Sulfur Colloid affects fertility in males and females. It is not known whether Technetium Tc 99m Sulfur Colloid can cause fetal harm when administered to a pregnant woman. The preparation should be given to a pregnant woman only if clearly needed. Ideally, examinations using radiopharmaceuticals, especially those elective in nature, of a woman of child-bearing capability should be performed during the first few (approximately 10) days following the onset of menstruation.

It is not known whether this drug is excreted in human milk. A decision should be made whether to discontinue nursing or to discontinue the drug.

Safety and effectiveness in children have not been established.

Adverse Reactions. Hypersensitivity reactions, including anaphylaxis, have been reported in patients receiving sulfur colloid preparation. One death and several cases of lung and soft tissue uptake other than RES have been reported in association with the use of Technetium Tc 99m Sulfur Colloid.

Dosage and Administration. The suggested intravenous dose range used in the average (70 kg) patient is 1 to 8 millicuries of Technetium Tc 99m Sulfur Colloid. When orally administered, the preparation is not absorbed from the G.I. tract. The patient dose should be measured by a suitable radioactivity calibration system immediately prior to administration.

How Supplied. Each kit contains 5 complete preparations plus instructions and 10 radioactivity labels. Each preparation is separately packaged and contains a reaction vial made with sterile, non-pyrogenic freeze-dried materials consisting of sodium thioulate (anhydrous) 2.0 mg, edetate disodium 2.3 mg and gelatin 18.1 mg; an “A” syringe containing 1.5 ml of sterile, non-pyrogenic 0.148 N hydrochloric acid solution and a “B” syringe containing 1.5 ml of sterile, non-pyrogenic aqueous solution of sodium biphosphate (anhydrous) 38.8 mg and sodium hydroxide 11.1 mg. Included in each preparation is one string label and two needles. Store kit contents at room temperature.

Catalog Number: K-601
Description: 5-preparation kit

Syncor International Corporation
12847 Arroyo Street
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Generators and radiopharmaceuticals that arrive on time, week after week.

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- Mallinckrodt weekend generators are delivered no later than 8 AM every Monday. If you need midweek delivery, your generator will arrive by 8 AM Wednesday.

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<td>• Unlimited Heart Rate Capability</td>
<td>• Both Heart Rate display and R-trigger pulses have unlimited tracking capability during stress studies.</td>
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<td>AccuSync-V</td>
<td>R-Trigger pulse output, ECG output, Heart Rate/R-R int., Strip Chart Recorder, Digital CRT Monitor and Isolation Amplifier for patient safety.</td>
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Guest Faculty: Philip O. Alderson, M.D., Director, Division of Nuclear Medicine, Columbia-Presbyterian Medical Center; Professor, Department of Radiology, Columbia University, College of Physicians and Surgeons. Philip A. Bardfield, M.D., Director, Nuclear Medicine, Nassau County Medical Center; Associate Professor, Department of Radiology, State University of New York at Stony Brook. Lanny Lutzker, M.D., Director, Nuclear Medicine, Lenox Hill Hospital; Clinical Assistant Professor, Department of Radiology, Albert Einstein College of Medicine; Leon Malmud, M.D., Director, Department of Nuclear Medicine, Temple Hospital; Professor of Nuclear Medicine and Radiology, Associate Professor of Medicine, Temple University, Health Sciences Center; Moshe Sorek, M.D., Physician-in-Charge, Nuclear Medicine, Brookdale Hospital Center; Assistant Professor of Clinical Radiology, State University of New York, Downstate Medical Center; Wihtredo Sy, M.D. Director, Department of Nuclear Medicine, The Brooklyn Hospital; Assistant Professor, Department of Radiology, State University of New York, Downstate Medical Center.
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Peter T. Kirchner, M.D., Editor

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3 Calibration Days

First Calibration Receipt

Monday Wednesday

Wednesday Friday

Friday Monday

3 Cyclotrons

*Our fourth will be operational December 1981.

More when you need it.

medi+physics™

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