Introducing Nephroflow™
IODOHIPPURATE SODIUM I 123 INJECTION

Normal Transplant Renogram¹

NEPHROFLOW, Iodhippurate Sodium I 123 Injection, 1.0 mCi

High Count Rate
High Detector Efficiency

Iodhippurate Sodium I 131 Injection, 0.15 mCi

Low Count Rate
Low Detector Efficiency

NEPHROFLOW provides better counting statistics and higher data density.

Now Available 2 mCi Vial

To Order call (800) MEDI-123

¹Reference: Data on file, Medi-Physics, Inc., Richmond, CA
Nephroflow™

- Particularly useful in obstructed patients
- Slight advantage in photon intensity
- Major advantage in ¼ inch crystal efficiency
- Imaging should be performed as close to calibration time as possible

Comparison of I 123 and I 131

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>I 123</th>
<th>I 131</th>
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<tr>
<td>Mode of Decay</td>
<td>Electron capture</td>
<td>Beta</td>
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<tr>
<td>Half-Life</td>
<td>13.2 hours</td>
<td>193 hours</td>
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<tr>
<td>Principal Gamma Energy (keV)</td>
<td>159</td>
<td>364</td>
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<tr>
<td>Intensity</td>
<td>84%</td>
<td>82%</td>
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<tr>
<td>Half-Value layer, lead, cm</td>
<td>0.037</td>
<td>0.24</td>
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<tr>
<td>Detection Efficiency</td>
<td>74.5%</td>
<td>22.5%</td>
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NEPHROFLOW™
IODOHIPPURATE SODIUM I 123 INJECTION

For complete prescribing information consult package insert, a brief summary of which follows:

DESCRIPTION: Iodohippurate Sodium I 123 Injection is supplied as a sterile, aprotic, aqueous, isotonic saline solution for intravenous administration. Each milliliter of the solution contains 37 megabecquerels (1 millicurie) Iodohippurate Sodium I 123 at calibration time, 2 milligrams Iodohippurate Sodium, 1 percent benzyl alcohol (as a preservative), 9 milligrams per milliliter sodium chloride for isotonicity, and up to 0.1 percent ethanol. The solution is buffered with sodium phosphate and the pH is adjusted to 7.0-8.5 with sodium hydroxide or hydrochloric acid. The radionuclidic composition at calibration time is not less than 94.7 percent I 123, not more than 4.8 percent I 124, and not more than 0.5 percent all others (I 125, I 126, I 130, Na 24, Te 121). The radionuclidic composition at expiration time is not less than 85.5 percent I 123, not more than 12.9 percent I 124, and not more than 1.6 percent all others.

INDICATIONS AND USAGE: Iodohippurate Sodium I 123 Injection is a diagnostic aid in determining renal function, renal blood flow, and urinary tract obstruction, and as a renal imaging agent.

CONTRAINDICATIONS: None Known.

WARNING: None Known.

PRECAUTIONS:

General
 Adequate shielding of the preparation must be maintained at all times.
 Do not use after the expiration time and date (24 hours after calibration time) stated on the label.
 The prescribed Iodohippurate Sodium I 123 dose should be administered as soon as practical from the time of receipt of the product (i.e., as close to calibration time as possible) in order to minimize the fraction of radiation exposure due to relative increase of radionuclidic contaminants with time.
 Iodohippurate Sodium I 123, as well as other radioactive drugs, must be handled with care and appropriate safety measures should be used to minimize radiation exposure to clinical personnel. Care should also be taken to minimize radiation exposure to the patient consistent with proper patient management.

Radioisotopes 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, mutagenic potential, or whether iodohippurate Sodium I 123 affects fertility in males or females.

Pregnancy Category C
 Animal reproduction studies have not been conducted with this drug. It is not known whether iodohippurate Sodium I 123 can cause fetal harm when administered to a pregnant woman, or can affect reproductive capacity. Iodohippurate Sodium I 123 should be given to a pregnant woman only if clearly needed.

Ideally, examinations using radiopharmaceuticals, especially those selective in nature, in women of childbearing capability should be performed during the first few (approximately ten) days following the onset of menses.

Nursing Mothers
 Since iodine-123 is excreted in human milk, formula-feeding should be substituted for breast feeding if the agent must be administered to the mother during lactation.

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

ADVERSE REACTIONS: As with all organic iodine containing compounds, the possibility of allergic reactions must be kept in mind. Nausea, vomiting, and fainting have been reported in conjunction with the administration of Iodohippurate Sodium I 123.

HOW SUPPLIED: Iodohippurate Sodium I 123 Injection is supplied in nominal 3.5 vials as a sterile, aprotic, aqueous, isotonic saline solution for intravenous injection. Each vial contains 37 megabecquerels (1 millicurie) of Iodohippurate Sodium I 123 at calibration time.
 It is available, in individual vials, in the following sizes:
 MPI Catalog No. 2041: 1 ml and 57 megabecquerels (1 mCi) per vial
 MPI Catalog No. 2042: 2 ml and 114 megabecquerels (2 mCi) per vial
 Vials are packaged in individual lead shields with plastic outer container.
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*N100% SATISFACTION GUARANTEED!

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Now there is a practical and economical way to meet your nuclear medicine requirements. NPI, the originator of Unidose pioneered the way with individual dosages of prescribed radiopharmaceuticals supplied only when you need them.

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Circle Reader Service No. 5
Offering a complete line of radiation monitoring devices and sensors.

Circle Reader Service No. 6
Efficient departmental management is no longer an elective procedure for nuclear medicine.

In the cost-conscious environment of today’s hospital, administrators are looking more carefully at departmental budgets. At the same time, attending physicians are ordering tests more selectively, basing their decisions both on the diagnostic information they need and the cost-effectiveness of the study.

Understanding Your Costs

This means that you are being asked to become more of a businessman, adding terms like “efficiency” and “productivity” to your medical vocabulary. Now you have to know the real operating costs of your department. What, for example, does it cost to perform a bone scan? Or a thallium study? Are most costs attributable to staff? To equipment? Or to supplies? Can changes in scheduling, inventory or procedure mix reduce these costs?

At Du Pont NEN we’ve developed a computer-based program to help you determine and analyze costs. Then, you can use the results to increase productivity in your department. It’s called Financial Management Analysis (FMA) and it’s available to all our customers.

FMA—A Management Program for You

Here’s how it works. Your Du Pont NEN representative will help you collect such data as costs for personnel, supplies and instrumentation, the number and kind of studies you perform and the time the studies take. Then, this input will be analyzed by the computer to show your costs per study, how your staff is being utilized and what your total costs are for every category, from film processing to maintenance. The program can even compare your figures with those of other departments at similar hospitals throughout the country. Your representative will present your FMA in a written report, and will review it with you to help you increase the efficiency of your department.

Ask your representative about FMA for your department. And about our other programs to help you meet the challenges of nuclear medicine in the ‘80s.

Our goal is Imaging Excellence: enhancing the image of your department while improving the images in your department.
Over a decade of research and clinical testing has gone into the LUNAR DP3 dual-photon spine/femur scanners. LUNAR scientists pioneered both single and dual-photon absorptiometry and helped LUNAR become the world’s largest manufacturer of bone measurement instrumentation.

LUNAR now offers the IBM-XT and AT* as options to our acclaimed DP3 scanner. Advanced features of the DP3-XT/AT include:

- Multi-tasking
- Automated peaking
- High-resolution color graphics
- Hard-disk storage

LUNAR continues to set the standard for bone measurement. These new features, plus a light-localizer and a bellyband, add to the DP3’s proven capability.

Contact us to see why the clinical leaders have turned to LUNAR with confidence.

Ask A User!

Our customers comprise over 85% of all clinical facilities using dual-photon absorptiometry. They selected the DP3 because LUNAR’s exclusive know-how ensures trouble-free, question-free operation and because of distinct advantages such as:

- Intelligent scans that reduce scan area, scan time, and patient exposure.
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Circle Reader Service No. 8
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Toll Free (800) 631-3826 or (201) 825-9500. Telex: 642375 (CAPINTEC RASY)
The imaging techniques currently used to evaluate myocardial infarction (MI) have a major drawback: They do not permit differentiation between cardiac necrosis and ischemia in the early hours following infarction.

Thallium-201, for example, concentrates only in normal myocardial cells. The bone scanning agent 99mTc-pyrophosphate, on the other hand, is taken up by the ribs as well as by all ischemic cells.

These agents are therefore of little use for differentiating between irreversible necrosis and severe ischemia. Yet the ability to make that distinction—and to make it quickly—could significantly improve management of cardiac patients.

Myoscint™, an imaging agent based on a monoclonal antibody specific to cardiac myosin, may fill this void in cardiac imaging technology.

Because this MAb binds solely to the intracellular myosin that is exposed on cell death, Myoscint concentrates only in necrotic cells (see diagram). It therefore permits precise localization of unsalvageable tissue.

**Improved MI diagnosis may also result**

In addition, Myoscint may permit MI detection and localization in areas of the heart that may otherwise be difficult to interpret.

A recent case demonstrates this capability. A 57-year-old male presented with diffuse chest pain. Although neither ECG nor echocardiographic examination revealed abnormalities, an elevated CPK indicated a need for further study.

Twenty-four hours after being injected with Indium 111-labeled Myoscint DTPA, the patient underwent a nuclear scan. The resulting images clearly demonstrated necrotic tissue in the postero-lateral region, confirming the diagnosis of MI (see images).

**Myoscint may be useful for nuclear and MR imaging**

Myoscint is being evaluated extensively in conjunction with traditional imaging techniques, including early thallium-201 distribution, early and late wall motion cineventriculography, and gated blood pool scanning. This research continues to verify its efficacy for identifying zones of acute myocardial necrosis.

In addition, paramagnetic-labeled Myoscint is undergoing investigation to evaluate its utility in magnetic resonance studies. Results to date indicate that it may indeed be an effective tool for cardiac assessment in the MR suite.

**Available for research use**

Myoscint is now available for RESEARCH USE ONLY. If you would like more information on this product, or other biotechnological products under development at Centocor, please call us, toll free.
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Circle Reader Service No. 11
Introducing the new Gemini Gamma Camera, with a totally new patient/detector relationship that puts the patient literally inside the camera. A design so unique, it is beyond comparison.

Gemini features a totally new concept in camera mechanics with seven different dimensions of motion. All for faster, easier, more precise positioning than any conventional gamma camera.

Gemini also has the most advanced electronics, Sentinel™ for optimum energy resolution, spatial linearity, and field uniformity correction. For clearer, sharper images than ever before.

The result: the most versatile, most productive gamma camera you can find anywhere. Planar imaging, whole body scans, circular and non-circular SPECT imaging, brain scans, cardiac studies, quantitative computer studies. With faster patient throughput, greater patient comfort, reduced space requirements, and easy field upgradeability to a dual detector configuration.

To see the new Technicare Gemini Gamma Camera for yourself, contact your local Sales Representative for a demonstration.
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look you like... and

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This service, and many more, is part of a comprehensive Kodak video imaging program. It’s a complete package of products and services designed to make your life easier in any modality that involves imaging on a video monitor.

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Scintronix is a young and fast growing company specializing in equipment for use in nuclear medicine.

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Our digicamera is already acclaimed as one of the world’s finest, but in line with our philosophy of continuous research, it has been further improved. Recent innovations include self-optimizing orbiting (a Scintronix first) for tomography, giving greater resolution and markedly improved clinical images.

ReLISM – Residual Light Interface Sensitivity Map – is a new third level correction system, developed by Scintronix to significantly reduce reconstruction artifacts in tomographic studies.

Further developments include a new multiformatter, capable of accepting both analog and digital input data, and producing clear, sharp images on 8” x 10” film.

Even the new analog operators console has been refined to offer greater flexibility such as information density, collimator checking and automatic isotope selection.

To enhance the performance of our image processor, we have introduced a number of new clinical software packages, including Cardiac: first pass and equilibrium, brain perfusion and non-circular reconstruction for tomography.

The software is available as FORTRAN modules, enabling the user to construct individual routines as and when necessary.

One of the world’s finest Digicameras – just getting better.
In the evaluation of pulmonary perfusion

MACROTEC
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AS

PARTICLE
PERFECT
AS POSSIBLE

More than 90% of particles in optimal 10 to 90 micron range
The average size is 20 to 40 microns...and no particles are greater than 150 microns. You'll get excellent images throughout a full 6 hours after reconstitution. Meets all your lung perfusion evaluation needs...scheduled or stat. Reconstitution time...only 6 minutes.

More than 80% lung uptake for reliable biological efficacy
Low supernatant activity (SA) and very high radiochemical purity (RCP) help assure biological efficacy you can depend on time after time.

Each Macrotec box label includes the average number of particles per vial.

The only MAA product indicated for use in isotopic venography

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Please see adjacent page for brief summary
DESCRIPTION

Macrotec is a sterile, nonpyrogenic, lyophilized preparation of albumin aggregated. Each 5 ml vial of Macrotec contains 1.5 mg of Albumin Aggregated, 10.0 mg Albumin Human, 0.07 mg (minimum) stannous chloride (SnCl2·2H2O) and 0.19 mg total tin, maximum (as stannous chloride, SnCl2·2H2O) 1.8 mg of sodium chloride with trace amounts of sodium acetate, acetic acid and hydrochloric acid. Macrotec contains no preservatives. The pH of the reconstituted product is between 3.8 and 8.0.

The aggregated particles are formed by denaturation of Albumin Human in a heating and precipitation process. Each vial contains 5-8 million particles, 90% of which are between 10 and 90 microns in size. The average size is 20 to 40 microns; no particles are greater than 150 microns.

Reconstitution of Macrotec with sterile sodium pertechnetate Tc99m forms an aqueous suspension of Technetium Tc 99m Albumin Aggregated for diagnostic use by intravenous injection. No less than 90% of the pertechnetate Tc 99m added to the reactivation vial is bound to the aggregates of preparation time and remains bound throughout the 6-hour lifetime of the suspension.

INDICATIONS AND USAGE

Lung Imaging

Macrotec (Technetium Tc 99m Albumin Aggregated Injection) is a lung imaging agent which may be used as an adjunct in the evaluation of pulmonary perfusion in adults and children. It is useful in the early detection of pulmonary emboli and in the evaluation of the status of the pulmonary circulation in such conditions as pulmonary neoplasms, pulmonary tuberculosis and emphysema.

Isotopic Venography

Macrotec is also indicated for use in isotopic venography as an adjunct in the screening, diagnosis and management of deep vein thrombosis in the lower extremities.

Combined isotopic venography of the lower extremities and the pulmonary vasculature may be performed.

CONTRAINDICATIONS

Technetium Tc 99m Albumin Aggregated Injection should not be administered to patients with severe pulmonary hypertension.

The use of Technetium Tc 99m Albumin Aggregated Injection is contraindicated in persons with a history of hypersensitivity reactions to products containing human serum albumin.

WARNINGS

The literature contains reports of deaths occurring after the administration of Albumin Aggregated to patients with pre-existing severe pulmonary hypertension. Instances of hemodynamic or idiosyncratic reactions to preparations of Technetium Tc 99m Albumin Aggregated have been reported.

PRECAUTIONS

General

In patients with right to left heart shunts, additional risk may exist due to the rapid entry of Albumin Aggregated into the systemic circulation. The safety of this agent in such patients has not been established.

Hypersensitivity reactions are possible whenever protein-containing materials such as pertechnetate labeled Albumin Aggregated are used in man. Epinephrine, antihistamines and corticosteroids should be kept available for immediate use.

The intravenous administration of any particulate material such as Albumin Aggregated imposes a temporary, small mechanical impediment to blood flow. While this effect is probably physiologically insignificant in most patients, the administration of Albumin Aggregated is possibly hazardous in acute cor pulmonary and other states of severely impaired pulmonary blood flow.

The components of the Macrotec (Technetium Tc 99m Albumin Aggregated Kit) are sterile and non-pyrogenic. It is essential to follow directions carefully and adhere to strict aseptic procedures during preparation.

Contents of the vial are intended only for use in the preparation of Technetium Tc 99m Albumin Aggregated Injection and are NOT to be administered directly to the patient.

The contents of the kit before preparation are not radioactive. However, after the sodium pertechnetate Tc 99m is added, adequate shielding of the final preparation must be maintained.

The technetium Tc 99m labeling reactions involved depend on maintaining the stannous ion in the reduced state. Hence, sodium pertechnetate Tc 99m containing oxidants should not be employed.

The preparation contains no bacteriostatic preservative. Technetium Tc 99m Albumin Aggregated Injection should be stored at 2-8°C and discarded 6 hours after formulation.

Technetium Tc 99m Albumin Aggregated Injection is a physically unstable suspension and consequently the particles settle with time. Failure to agitate the vial adequately before use may result in non-uniform distribution of radioactive particles.

If blood is drawn into the syringe, unnecessary delay prior to injection may result in clot formation.

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

As in the use of any other radioactive material, care should be taken to minimize radiation exposure to patients consistent with proper patient management, and to minimize radiation exposure to clinical personnel.

Carcinogenesis, Mutagenesis, Impairment of Fertility

No long-term animal studies have been performed to evaluate carcinogenic potential or whether Technetium Tc 99m Albumin Aggregated Injection affects fertility in males or females.

Pregnancy Category C

Animal reproduction and teratogenicity studies have not been conducted with Technetium Tc 99m Albumin Aggregated Injection. It is also not known whether Technetium Tc 99m Albumin Aggregated Injection can cause fetal harm when administered to a pregnant woman or can affect reproductive capacity. There have been no studies in pregnant women. Technetium Tc 99m Albumin Aggregated Injection 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

The lowest possible number of particles should be used in the right-to-left shunting, in neonates and in severe pulmonary disease.

ADVERSE REACTIONS

Although adverse reactions specifically attributable to the Technetium Tc 99m Albumin Aggregated Injection have not been noted, the literature contains reports of deaths occurring after the administration of Albumin Aggregated to patients with pre-existing severe pulmonary hypertension. Instances of hemodynamic or idiosyncratic reactions to preparations of Technetium Tc 99m Albumin Aggregated have been reported.

HOW SUPPLIED

Macrotec (Technetium Tc 99m Albumin Aggregated) is supplied as a kit containing 10 reaction vials (5 ml size).
Why settle for anything less in PET?

ECAT® SCANNERS — True < 5mm 3-D resolution, true multiple planes, true high throughput, true biochemical analysis in vivo.

RADIOISOTOPE DELIVERY SYSTEMS — Compact, automated, shielded, affordable cyclotron, targetry, and radiochemistry systems.

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SNM announces the 1985 updates to...

Low-Level Radiation Effects: A Fact Book

Edited by A. Bertrand Brill, M.D.

This book represents a conscientious attempt to provide an unbiased, up-to-date source of knowledge regarding the potential long- and short-term effects of radiation exposure to humans. Because radiation exposure is an important and controversial topic, so much material is available. This fact book contains a concise reference list for readers wishing to obtain additional, or more detailed, information.

Important new sources of information provided the stimulus for publishing the 1985 updates to keep the fact book current. New reports issued by UNSCEAR, ICRP, and NCRP and references to recent publications of findings among Japanese A-bomb survivors have been added.

Available alone, or included with the original document, the 1985 updates will prove indispensable to a wide range of physicians, scientists, engineers, and technologists involved in the field.

‘Only when information issued in a publication such as this becomes widespread and understood can rationality prevail in the public's attitude toward low-level radiation.’

— from the Foreword by Rosalyn Yalow, Ph.D. Nobel Laureate

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- Risks—Statistical Facts and Public Perception
- Questions and Answers
- Appendix: Sources of Documents
- References
- Recommended Readings

8½ × 11" looseleaf format: original text, 156 pages, including binder; 1985 updates, 80 pages, without binder.

Prices: $32.00 for original document plus 1985 update package
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San Francisco General Hospital Medical Center
San Francisco, CA 94110

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A memorandum of information is available on request from the Medical Personnel Officer, telephone (09) 380 1122, ext. 2444. Further information may also be obtained from Dr. F. Lovogrove, Head of Department of Nuclear Medicine, Telephone (09) 389 3333.

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Local Faculty: Ruza Antonovic, MD; Paul H. Brown, PhD; Susan Gilbert, CNMT; Jerry V. Glowniak, MD; Emmet B. Keeffe, MD; G.T. Krishnamurthy, MD; David A. Lieberman, MD; Anna Sasaki, MD; Truman Sasaki, MD; H. David Spect, MD; Frederick E. Turner, RPh, MS; and Eileen A. Westcott, CNMT

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