SUMMARY OF PRODUCT CHARACTERISTICS

1 NAME OF THE MEDICINAL PRODUCT

Technescan MAG3
(Curium Netherlands catalogue number: DRN 4334)

2 QUALITATIVE AND QUANTITATIVE COMPOSITION

One vial contains:
Betiatide 1 mg

To be used with sodium pertechnetate (^{99m}Tc) for the preparation of the diagnostic agent: Technetium (^{99m}Tc) tiatide. The radionuclide is not part of the kit.

3 PHARMACEUTICAL FORM

Kit for radiopharmaceutical preparation
Powder for solution for injection.

4 CLINICAL PARTICULARS

4.1 Therapeutic indications

After reconstitution and labelling with sodium pertechnetate (^{99m}Tc) solution the diagnostic agent technetium (^{99m}Tc) tiatide may be used for the evaluation of nephrological and urological disorders in particular for the study of morphology, perfusion, function of the kidney and characterisation of urinary outflow.

4.2 Posology and method of administration

Adults and the elderly:
37-185 MBq (1-5 mCi), depending on the pathology to be studied and the method to be used. Studies of renal blood flow or transport through the ureters generally require a larger dose than studies of intra-renal transport, whereas renography requires smaller activities than sequential scintigraphy.

The administration of a diuretic or an ACE inhibitor during the diagnostic procedure is sometimes used for differential diagnosis of nephrological and urological disorders.

Children:
Although Technescan MAG3 may be used in paediatric patients, formal studies have not been performed. Clinical experience indicates that for paediatric use the activity should be reduced. Because of the variable relationship between the size and body weight of patients it is sometimes more satisfactory to adjust activities to body surface area.

The activity to be administered in children and adolescents is determined according to the EANM dosage card (2014) using the following formula:

The activity to be administered A[MBq] = Baseline activity (of 11.9 MBq) x Multiple

The activities to be applied are listed in the following table:

Weight (kg)	Activity (MBq)	Weight (kg)	Activity (MBq)	Weight (kg)	Activity (MBq)
3	15	22	36	42	52
4	15	24	38	44	54
6	18	26	40	46	55
8	20	28	41	48	57
10	23	30	43	50	58
12	26	32	45	52 - 54	60
14	28	34	46	56 - 58	62
16	30	36	48	60 - 62	65
18	32	38	50	64 - 66	67
20	34	40	51	68	69

In very young children, a minimum dose of 15 MBq is necessary in order to obtain images of sufficient quality.

Method of administration
For intravenous use.
For multidose use.
The scintigraphic investigation is usually performed immediately after administration.

For instructions on reconstitution and control of the radiochemical purity of the medicinal product before administration, see section 12.

For patient preparation, see section 4.4.

4.3 Contraindications

Hypersensitivity to the active substance or to any of the excipients.

4.4 Special warnings and precautions for use

Potential for hypersensitivity or anaphylactic reactions

If hypersensitivity or anaphylactic reactions occur, the administration of the medicinal product must be discontinued immediately and intravenous treatment initiated, if necessary. To enable immediate action in emergencies, the necessary medicinal products and equipment such as endotracheal tube and ventilator must be immediately available.

Individual benefit/risk justification
For each patient, exposure to ionising radiation must be justifiable on the basis of likely benefit. The activity administered must be such that the resulting radiation dose is as low as reasonably achievable bearing in mind the need to obtain the intended diagnostic result.

Paediatric population
For information on the use in the paediatric population, see section 4.2. Careful consideration of the indication is required since the effective dose per MBq is higher than in adults (see section 11).

Patient preparation
The patient should be well hydrated before the start of the examination and urged to void as often as possible during the first hours after the study in order to reduce radiation.

Specific warnings
The agent is not suited for exact monitoring of effective renal plasma flow respectively blood flow in patients with seriously impaired renal function.

Small amounts of ^{99m}Tc-labelled impurities may be present and/or are formed during the labelling process. As some of these impurities are distributed to the liver and excreted via the gall bladder they may influence the late phase (after 30 minutes) of a dynamic renal study due to the overlap of kidney and liver in the region of interest.

This medicinal product contains less than 1 mmol sodium (23 mg) per vial, i. e. essentially ‘sodium-free’.

4.5 Interaction with other medicaments and other forms of interaction

Technetium (^{99m}Tc) tiatide has not been described to interfere with agents commonly prescribed to given to patients requiring the above mentioned investigations (e.g. antihypertensives and medicinal agents used to treat or prevent organ transplant rejection). However, the single administration of a diuretic or ACE inhibitor is sometimes used in the differential diagnosis of nephrological and urological disorders. Administered contrast media may impair tubular renal excretion and thereby influence the technetium (^{99m}Tc) tiatide clearance.

4.6 Fertility, pregnancy and lactation

Women of childbearing potential

When it is necessary to administer radioactive medicinal products to women of childbearing potential, information should always be sought about pregnancy. Any woman who has missed a period should be assumed to be pregnant until proven otherwise. Where uncertainty exists it is important that radiation exposure should be the minimum consistent with achieving the desired clinical information. Alternative techniques which do not involve ionising radiation should be considered.

Pregnancy

Radionuclide procedures carried out on pregnant women also involve radiation doses to the fetus. Only imperative investigations should be carried out during pregnancy, when likely benefit exceeds the risks incurred by mother and fetus.

Breastfeeding
Before administering a radioactive medicinal product to a mother who is breast-

feeding consideration should be given as to whether the investigation could be reasonably delayed until the mother has ceased breast-feeding and as to whether the most appropriate choice of radiopharmaceutical has been made, bearing in mind the secretion of activity in breast milk. If the administration is considered necessary, breast-feeding should be interrupted for 8 hours and the expressed feeds discarded. In the event of uncertainty it is usually advised that breast-feeding can be restarted when the level in the milk will not result in a radiation dose to a child greater than 1 mSv.

4.7 Effects on ability to drive and use machines

Have not been described.

4.8 Undesirable effects

Occurrences of anaphylactoid reactions have been reported, such as urticaria, swelling of the eyelids, itching, nausea and headache. Although the probability of occurrence of such a reaction is rather small, the appropriate treatment of allergic reactions (adrenaline, corticosteroids and antihistamines) should always be kept available for immediate use. In addition mild vasovagal reactions have been reported.

Exposure to ionising radiation is linked with cancer induction and a potential for development of hereditary defects. As the effective dose is 2.0 mSv when the maximal recommended activity of 185 MBq is administered these adverse reactions are expected to occur with a low probability.

Reporting of suspected adverse reactions

Reporting suspected adverse reactions after authorization of the medical product is important. It allows continued monitoring of the benefit/risk balance of the medicinal product. Healthcare professionals are asked to report any suspected adverse reactions via the national reporting system listed in Appendix V*.

4.9 Overdose

The risk of an excessive technetium (^{99m}Tc) tiatide dose is largely theoretical and most likely to be due to excessive radiation exposure. In such circumstances the radiation to the body (kidney, bladder and gall bladder) can be reduced by forced diuresis and frequent bladder voiding.

5 PHARMACOLOGICAL PROPERTIES

5.1 Pharmacodynamic properties

Pharmacotherapeutic group: Diagnostic radiopharmaceuticals, renal system, technetium (^{99m}Tc) compounds, ATC code: V09CA03.
At the chemical doses envisaged technetium (^{99m}Tc) tiatide Injection has no known pharmacodynamic action. Measuring the activity over the kidneys allows renal blood flow, intrarenal tubular transit times and
excretion via the outflow tracts to be recorded separately for both kidneys.

5.2 Pharmacokinetic properties

After intravenous injection technetium (^{99m}Tc) tiatide is rapidly cleared from the blood by the kidneys. Technetium (^{99m}Tc) tiatide has a relatively high binding to plasma proteins. In normal renal function 70% of the administered dose has been excreted after 30 min. and more than 95% after 3 hours. These latter percentages are dependent on the pathology of the kidneys and the urogenital system. The mechanism of excretion is predominantly based on tubular secretion. Glomerular filtration accounts for 11% of total clearance.

5.3 Preclinical safety data

Acute, subacute (8 days) and chronic (13 weeks) toxicity studies as well as mutagenicity studies were performed. At the studied dose levels, up to 1000 times the maximal human dose, no toxicological effects were observed. Similarly, mutagenic effects have not been observed.

6 PHARMACEUTICAL PARTICULARS

6.1 List of excipients

Disodium tartrate dihydrate
Tin(II)chloride dihydrate
Hydrochloric acid

6.2 Incompatibilities

Major incompatibilities: not known. However, in order not to compromise the stability of ^{99m}Tc-tiatide, preparations should not be administered together with other drugs.

6.3 Shelf life

12 months.
After labelling Technetium (^{99m}Tc) tiatide Injection: 8 hours.

6.4 Special precautions for storage

Technescan MAG3 is to be stored at 2-8 °C. For storage conditions after radiolabelling of the medicinal product, see section 6.3.

Storage should be in accordance with national regulations for radioactive materials.

6.5 Nature and contents of container

10 ml Type 1 Ph.Eur glass vial closed with a butyl rubber stopper Ph.Eur and sealed with an aluminium crimpcap. TechneScan® MAG3 is supplied as five vials in a carton.

6.6 Special precautions for disposal

Radiopharmaceuticals should be received, used and administered only by authorised persons in designated clinical settings. Their receipt, storage, use, transfer and disposal is subject to the regulations and/or appropriate licences of the local competent official organisation.

Radiopharmaceuticals should be prepared in a manner which satisfies both radiation safety and pharmaceutical quality requirements. Appropriate aseptic precautions should be taken.

Contents of the vial are intended only for use in the preparation of technetium (^{99m}Tc) MAG3 and are not to be administered directly to the patient without first undergoing the preparative procedure.

For instructions on preparation of the medicinal product, see section 12.

If at any time in the preparation of this product the integrity of the vials is compromised they should not be used.

Administration procedures should be carried out in a way to minimise the risk of contamination of the medicinal product and irradiation of the operators. Adequate shielding is mandatory.

The content of the kit before extemporary preparation is not radioactive. However, after sodium pertechnetate (^{99m}Tc), is added, adequate shielding of the final preparation must be maintained.

The administration of radiopharmaceuticals creates risks for other persons from external radiation or contamination from spill of urine, vomiting, etc. Radiation protection precautions in accordance with national regulations must therefore be taken.

Instructions for waste disposal:
Unused Technetium (^{99m}Tc) tiatide should be allowed to decay until the activity has dropped to such a low level that, according to local regulations, it is no longer considered radioactive. Then it may be disposed of as harmless waste.

Any unused product or waste material should be disposed of in accordance with local requirements.

7 MARKETING AUTHORISATION HOLDER

Curium Netherlands B.V.
Westerduinweg 3
1755 LE Petten

Netherlands

8 MARKETING AUTHORISATION NUMBER(S)

PL 12288/0014

9 DATE OF FIRST AUTHORISATION/RENEWAL OF THE AUTHORISATION

21 March 2001

10 DATE OF REVISION OF THE TEXT

12/04/2023

11 DOSIMETRY (IF APPLICABLE)

The following radiation dosimetry is calculated according to the MIRD system. The data are given in ICRP publication 80 in 1998.

The following assumptions have been made in this model:

- In the normal case following intravenous administration of MAG3, the substance is rapidly distributed in the extracellular fluid and excreted entirely by the renal system according to the kidney-bladder model. Total body retention is described by a three-exponential function. The renal transit time is assumed to be 4 minutes as for Hippuran.
- When renal function is bilaterally impaired, it is assumed that the clearance rate of the substance is one tenth of that of the normal case, that the renal transit time is increased to 20 minutes, and that a fraction of 0.04 is taken up in the liver.
- As an example of acute unilateral renal blockage, it is assumed that a fraction of 0.5 of the administered radiopharmaceutical is taken up by one kidney and slowly released to the blood with a half-time of 5 days and subsequently excreted by the other kidney, which is assumed to function normally.

Normal renal function:
Absorbed doses ^{99m}Tc MAG3, ^{99m}Tc 6.02 h

	Absorbed dose per unit activity administered (mGy/MBq)				
Organ	Adult	15 years	10 years	5 years	1 year
Adrenals	3.9E-04	5.1E-04	8.2E-04	1.2E-03	2.5E-03
Bladder	1.1E-01	1.4E-01	1.7E-01	1.8E-01	3.2E-01
Bone surfaces	1.3E-03	1.6E-03	2.1E-03	2.4E-03	4.3E-03
Brain	1.0E-04	1.3E-04	2.2E-04	3.5E-04	6.1E-04
Breast	1.0E-04	1.4E-04	2.4E-04	3.9E-04	8.2E-04
Gall bladder	5.7E-04	8.7E-04	2.0E-03	1.7E-03	2.8E-03
GI-tract					
Stomach	3.9E-04	4.9E-04	9.7E-04	1.3E-03	2.5E-03
SI	2.3E-03	3.0E-03	4.2E-03	4.6E-03	7.8E-03
Colon	3.4E-03	4.3E-03	5.9E-03	6.0E-03	9.8E-03
ULI	1.7E-03	2.3E-03	3.4E-03	4.0E-03	6.7E-03)
LLI	5.7E-03	7.0E-03	9.2E-03	8.7E-03	1.4E-02)
Heart	1.8E-04	2.4E-04	3.7E-04	5.7E-04	1.2E-03
Kidneys	3.4E-03	4.2E-03	5.9E-03	8.4E-03	1.5E-02
Liver	3.1E-04	4.3E-04	7.5E-04	1.1E-03	2.1E-03
Lungs	1.5E-04	2.1E-04	3.3E-04	5.0E-04	1.0E-03
Muscles	1.4E-03	1.7E-03	2.2E-03	2.4E-03	4.1E-03
Oesophagus	1.3E-04	1.8E-04	2.8E-04	4.4E-04	8.2E-04
Ovaries	5.4E-03	6.9E-03	8.7E-03	8.7E-03	1.4E-02
Pancreas	4.0E-04	5.0E-04	9.3E-04	1.3E-03	2.5E-03
Red marrow	9.3E-04	1.2E-03	1.6E-03	1.5E-03	2.1E-03
Skin	4.6E-04	5.7E-04	8.3E-04	9.7E-04	1.8E-03
Spleen	3.6E-04	4.9E-04	7.9E-04	1.2E-03	2.3E-03
Testes	3.7E-03	5.3E-03	8.1E-03	8.7E-03	1.6E-02
Thymus	1.3E-04	1.8E-04	2.8E-04	4.4E-04	8.2E-04
Thyroid	1.3E-04	1.6E-04	2.7E-04	4.4E-04	8.2E-04
Uterus	1.2E-02	1.4E-02	1.9E-02	1.9E-02	3.1E-02
Remaining Organs	1.3E-03	1.6E-03	2.1E-03	2.2E-03	3.6E-03
Effective dose (mSv/MBq)	**7.0E-03**	**9.0E-03**	**1.2E-02**	**1.2E-02**	**2.2E-02**

The bladder wall contributes up to 80 % of the effective dose.
Effective dose if bladder is emptied 1 or 0,5 hours after administration:

1 hour	2.5E-03	3.1E-03	4.5E-03	6.4E-03	6.4E-03
30 min.	1.7E-03	2.1E-03	2.9E-03	3.9E-03	6.8E-03

For an administered activity of 185 MBq (Maximal dose) the effective dose is 1.3 mSv.
The absorbed dose in the target organ (kidney) is 0.63 mGy and the typical radiation dose to the critical organ (bladder wall) is 20 mGy.

Abnormal renal function:
Absorbed doses ^{99m}Tc MAG3, ^{99m}Tc 6.02 h

	Absorbed dose per unit activity administered (mGy/MBq)				
Organ	Adult	15 years	10 years	5 years	1 year
Adrenals	1.6E-03	2.1E-03	3.2E-03	4.8E-03	8.6E-03
Bladder	8.3E-02	1.1E-01	1.3E-01	1.3E-01	2.3E-01
Bone surfaces	2.2E-03	2.7E-03	3.8E-03	5.0E-03	9.1E-03
Brain	6.1E-04	7.7E-04	1.3E-03	2.0E-03	3.6E-03
Breast	5.4E-04	7.0E-04	1.1E-03	1.7E-03	3.2E-03
Gall bladder	1.6E-03	2.2E-03	3.8E-03	4.6E-03	6.4E-03
GI-tract					
Stomach	1.2E-03	1.5E-03	2.6E-03	3.5E-03	6.1E-03
SI	2.7E-03	3.5E-03	5.0E-03	6.0E-03	1.0E-02
Colon	3.5E-03	4.4E-03	6.1E-03	6.9E-03	1.1E-02
ULI	2.2E-03	3.0E-03	4.3E-03	5.6E-03	9.3E-03)
LLI	5.1E-03	6.3E-03	8.5E-03	8.6E-03	1.4E-02)
Heart	9.1E-04	1.2E-03	1.8E-03	2.7E-03	4.8E-03
Kidneys	1.4E-02	1.7E-02	2.4E-02	3.4E-02	5.9E-02
Liver	1.4E-03	1.8E-03	2.7E-03	3.8E-03	6.6E-03
Lungs	7.9E-04	1.1E-03	1.6E-03	2.4E-03	4.5E-03
Muscles	1.7E-03	2.1E-03	2.9E-03	3.6E-03	6.4E-03
Oesophagus	7.4E-04	9.7E-04	1.5E-03	2.3E-03	4.1E-03
Ovaries	4.9E-03	6.3E-03	8.1E-03	8.7E-03	1.4E-02
Pancreas	1.5E-03	1.9E-03	2.9E-03	4.3E-03	7.4E-03
Red marrow	1.5E-03	1.9E-03	2.6E-03	3.1E-03	5.0E-03
Skin	7.8E-04	9.6E-04	1.5E-03	2.0E-03	3.8E-03
Spleen	1.5E-03	1.9E-03	2.9E-03	4.3E-03	7.4E-03
Testes	3.4E-03	4.7E-03	7.1E-03	7.8E-03	1.4E-02
Thymus	7.4E-04	9.7E-04	1.5E-03	2.3E-03	4.1E-03
Thyroid	7.3E-04	9.5E-04	1.5E-03	2.4E-03	4.4E-03
Uterus	1.0E-02	1.2E-02	1.6E-02	1.6E-02	2.7E-02
Remaining Organs	1.7E-03	2.1E-03	2.8E-03	3.4E-03	6.0E-03
Effective dose (mSv/MBq)	**6.1E-03**	**7.8E-03**	**1.0E-02**	**1.1E-02**	**1.9E-02**

For an administered activity of 185 MBq (Maximal dose) the effective dose is 1.1 mSv.
The absorbed dose in the target organ (kidney) is 2.6 mGy and the typical radiation dose to the critical organ (bladder wall) is 15 mGy.

Acute unilateral renal function:
Absorbed doses ^{99m}Tc MAG3, ^{99m}Tc 6.02 h

	Absorbed dose per unit activity administered (mGy/MBq)				
Organ	Adult	15 years	10 years	5 years	1 year
Adrenals	1.1E-02	1.4E-02	2.2E-02	3.2E-02	5.5E-02
Bladder	5.6E-02	7.1E-02	9.1E-02	9.3E-02	1.7E-01
Bone surfaces	3.1E-03	4.0E-03	5.8E-03	8.4E-03	1.7E-02
Brain	1.1E-04	1.4E-04	2.3E-04	3.9E-04	7.5E-04
Breast	3.8E-04	5.1E-04	1.0E-03	1.6E-03	3.0E-03
Gall bladder	6.2E-03	7.3E-03	1.0E-02	1.6E-02	2.3E-02
GI-tract					
Stomach	3.9E-03	4.4E-03	7.0E-03	9.3E-03	1.2E-02
SI	4.3E-03	5.5E-03	8.5E-03	1.2E-02	1.9E-02
Colon	3.9E-03	5.0E-03	7.2E-03	9.2E-03	1.5E-03
ULI	4.0E-03	5.1E-03	7.6E-03	1.0E-02	1.6E-02)
LLI	3.8E-03	4.8E-03	6.7E-03	8.2E-03	1.3E-02)
Heart	1.3E-03	1.6E-03	2.7E-03	4.0E-03	6.1E-03
Kidneys	2.0E-01	2.4E-01	3.3E-01	4.7E-01	8.1E-01
Liver	4.4E-03	5.4E-03	8.1E-03	1.1E-02	1.7E-02
Lungs	1.1E-03	1.6E-03	2.5E-03	3.9E-03	7.2E-03
Muscles	2.2E-03	2.7E-03	3.7E-03	5.1E-03	8.9E-03
Oesophagus	3.8E-04	5.4E-04	8.5E-04	1.5E-03	2.3E-03
Ovaries	3.8E-03	5.1E-03	7.1E-03	9.2E-03	1.5E-02
Pancreas	7.4E-03	9.0E-03	1.3E-02	1.8E-02	2.9E-02
Red marrow	3.0E-03	3.6E-03	5.0E-03	6.0E-03	8.3E-03
Skin	8.2E-04	1.0E-03	1.5E-03	2.2E-03	4.2E-03
Spleen	9.8E-03	1.2E-02	1.8E-02	2.6E-02	4.0E-02
Testes	2.0E-03	2.9E-03	4.5E-03	5.0E-03	9.8E-03
Thymus	3.8E-04	5.4E-04	8.5E-04	1.5E-03	2.3E-03
Thyroid	1.7E-04	2.3E-04	4.5E-04	9.2E-04	1.6E-03
Uterus	7.2E-03	8.7E-03	1.2E-02	1.3E-02	2.2E-02
Remaining Organs	2.1E-03	2.6E-03	3.6E-03	4.7E-03	8.0E-03
Effective dose (mSv/MBq)	**1.0E-02**	**1.2E-02**	**1.7E-02**	**2.2E-02**	**3.8E-02**

For an administered activity of 185 MBq (Maximal dose) the effective dose is 1.85 mSv. The absorbed dose in the target organ (kidney) is 37 mGy and the typical radiation dose to the critical organ (bladder wall) is 10 mGy.

12 INSTRUCTIONS FOR PREPARATION OF RADIOPHARMACEUTICALS

The content of the vial is to be labelled with Sodium Pertechnetate (^{99m}Tc) Injection Ph.Eur. After reconstitution with a sodium pertechnetate (^{99m}Tc) solution the diagnostic agent technetium (^{99m}Tc) tiatide is obtained upon boiling. The formation of labelled impurities is minimal, when using an eluate with the smallest possible volume. Therefore, labelling should be done using an eluate with the highest possible radioactive concentration. Only eluates obtained from a ^{99m}Tc-generator, which has been eluted once in the preceding 24 hours should be used. Dilution of the preparation should be done with saline. After reconstitution and labelling the solution may be used for one or more administrations.

For labelling it is recommended to use an eluate with the highest possible radioactive concentration, as the formation of labelled impurities is the least when using an eluate with the smallest possible volume.

Elute a ^{99m}Tc generator in a 5 ml volume, according to the fractionated elution technique and follow the directions for use for the generator. Use 3 ml eluate.

The desired amount of ^{99m}Tc, with a maximum of 2960 MBq (80 mCi) must be diluted to a volume of 10 ml with saline solution (0.9%). Add this volume to a vial of TechneScan® MAG3. For this a thin needle must be used (G20 or higher) so that the puncture hole closes again. This prevents the water from entering the vial during the heating and cooling steps that follow.

Heat immediately during 10 minutes in a dry heating device or boiling water bath. During heating the vial should be standing upright in order to prevent traces of metal coming off the rubber stopper, so influencing the labelling procedure unfavourably.

Cool down the vial to room temperature in cold water. The preparation is ready for administration. This ^{99m}Tc labelled preparation can be used until 8 hours after completion of the heating step.

Preferably use eluates obtained by fractionated elution. Follow the pertinent directions for use of the generator.

Properties of the product after radiolabelling:
Clear to slightly opalescent, colourless, aqueous solution.
pH : 5.0-6.0
Osmolality : slightly hypertonic.

Precaution during the labelling procedure
To indicate that during the heating and the cooling step no contamination of the contents of the vial has occurred, the user is advised to add a suitable dyestuff to the heating bath and to the cooling bath (e.g. methylene blue to make a concentration of 1 % or sodium fluorescein to make a concentration of 0.1 %). The radiolabelled product vial should be examined for contamination (taking appropriate radiological protective measures) prior to use.

Instructions for quality control
The following methods may be used:

1. HPLC method:
The radiochemical purity of the labelled substance is examined by high performance liquid chromatography (HPLC) using a suitable detector of radioactivity, on a 25 cm RP18 column, flow rate 1.0 ml/min. Mobile phase A is a 93:7 mixture of phosphate solution (1.36 g KH_2PO_4, adjusted with 0.1 M NaOH to pH 6) and ethanol. Mobile phase B is a 1:9 mixture of water and methanol.
Use an elution program with the following parameters:

Time (min):	Flow (ml/min):	%A	%B
10	1	100	0
15	1	0	100

The technetium-(99mTc) tiatide peak appears at the end of the passage of mobile phase A. The injection volume is 20 µl and the total count rate per channel must not exceed 30.000.
Requirement:

	t=0	after 8 hours
Tiatide	≥ 95.0%	≥ 94.0%
Total front fractions	≤ 3.0%	≤ 3.0%
Methanol fraction	≤ 4.0%	≤ 4.0%

2. Simplified rapid procedure.
This method may be used as an alternative for the above mentioned methods. The purpose of this method is to check the labelling procedure, as performed by the user in the hospital.

The method is based on cartridges, which are widely used as sample pretreatment of aqueous solutions for chromatography.

Material:

- Water Sep-Pak C18 Plus short cartridge, 360 mg sorbent per cartridge; product number WAT020515
- Ethanol absolute
- 0.001 M Hydrochloric acid
- Ethanol/Saline (Ethanol - Sodium Chloride solution 9g/L (ratio 1:1))

Stepwise process:

The cartridge (e.g. Sep-Pak light C18, Waters) is washed with 5 ml absolute ethanol, followed by 5 ml 0.001M hydrochloric acid. Remaining residues of the solutions are removed by 5 ml of air.
The Technetium (^{99m}Tc) tiatide solution (e.g. 0.1- 0.3 ml) is applied on the cartridge. It is important that the column is not dried out during all the different steps. Elute dropwise with 5 ml 0.001 M HCl and collect the eluate. This first eluate contains all hydrophilic impurities.
Next, elute the cartridge with 5 ml ethanol/saline solution (1:1 v/v). This second eluate contains Technetium (^{99m}Tc) tiatide. The cartridge contains the non-elutable impurities. Measure the radioactivity and calculate the respective percentages. Use the combined eluted radioactivity as 100%.

Calculation of radiochemical purity:

$$\frac{\text{Activity } 2^{nd} \text{ eluate}}{*} * 100\%$$

Combined eluted activity + cartridge

Requirement:

	T = 0	after 8 hours
Technetium (^{99m}Tc) Tiatide	≥ 95.0 %	≥ 94.0 %
Hydrophilic impurities	≤ 3.0 %	≤ 3.0 %
Lipophilic impurities	≤ 4.0 %	≤ 4.0 %