SUMMARY OF PRODUCT CHARACTERISTICS

1 NAME OF THE MEDICINAL PRODUCT

Trade name: TechneScan® DMSA

(Curium Netherlands catalogue number: DRN 4341)
Non-proprietary name: Technetium (^{99m}Tc)-Succimer.

2 QUALITATIVE AND QUANTITATIVE COMPOSITION

Dimercaptosuccinic acid	1.2 mg

3 PHARMACEUTICAL FORM

Powder for injection.

4 CLINICAL PARTICULARS

4.1 Diagnostic indications

After reconstitution with sodium pertechnetate (^{99m}Tc) solution the agent may be used for:

Static (planar or tomographic) renal imaging:

- morphological studies of renal cortex
- individual kidney function
- location of ectopic kidney.

4.2 Posology and method of administration

In adults, the recommended activity is 30 to 120 MBq. The image acquisitions may be performed as soon as 1 to 3 hours post-injection. Where there is renal impairment or obstruction, delayed views may be needed (6 to 24 hours respectively).

Paediatric dose: the dose for children is adjusted according to body weight:

$$\text{Paediatric dosage (MBq)} = \frac{\text{Adult dosage (MBq)} \times \text{Child weight (kg)}}{70}$$

In some circumstances, dose adjustment according to surface area may be appropriate:

$$\text{Paediatric dosage (MBq)} = \frac{\text{Adult dosage (MBq)} \times \text{Child body surface}(m^2)}{1.73}$$

4.3 Contraindications

None.

4.4 Special warnings and special precautions for use

This radiopharmaceutical may be received, used and administered only by authorised persons in designated clinical settings. Its receipt, storage, use, transfer and disposal are subject to the regulations and/or appropriate licences of the local competent official organisations.

Radiopharmaceuticals should be prepared by the user in a manner which satisfies both radiation safety and pharmaceutical quality requirements. Appropriate aseptic precautions should be taken, complying with the

requirements of Good Manufacturing Practice for pharmaceuticals.

4.5 Interaction with other medicinal products and other forms of interaction

Some chemical compounds or medicaments may affect the function of tested organs and influence the uptake of technetium (^{99m}Tc) succimer (DMSA) i.e:

- ammonium chloride: may substantially reduce renal uptake and increase hepatic uptake of technetium (^{99m}Tc) succimer (DMSA)
- sodium bicarbonate: reduction of renal uptake of technetium (^{99m}Tc) succimer (DMSA)
- mannitol: reduction of renal uptake of technetium (^{99m}Tc) succimer (DMSA)

To avoid these influences, treatment with any of the above chemical products should be interrupted where possible. Care should be taken to ensure the patient is adequately hydrated before scanning.

- captopril: In patients with unilateral renal artery stenosis, uptake of technetium (^{99m}Tc) succimer (DMSA) will be impaired in the affected kidney. This is usually reversible after discontinuation of the captopril.

4.6 Pregnancy and lactation

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

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 12 hours and the expressed feeds discarded. 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 Effect on ability to drive and use machines

Effects on the ability to drive or to use machines have not been described and are not expected.

4.8 Undesirable effects

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 or therapeutic result. Exposure to ionising radiation is linked with cancer induction and a potential for development of hereditary defects. For diagnostic nuclear medicine investigations the current evidence suggests that these adverse effects will occur with low frequency because of the low radiation doses incurred.

For most diagnostic investigations using a nuclear medicine procedure the radiation dose delivered (EDE) is less than 20 mSv. Higher doses may be

justified under some clinical circumstances. Occasional “allergic reactions” have been reported in the literature although to date these have been inadequately described.

4.9 Overdose

In the event of the administration of a radiation overdose with technetium (^{99m}Tc) succimer (DMSA) the absorbed dose to the patient should be reduced where possible by increasing the elimination of the radionuclide from the body by forced diuresis and frequent bladder voiding.

5 PHARMACOLOGICAL PROPERTIES

5.1 Pharmacodynamic properties

At the chemical concentrations and activities used for diagnostic procedures technetium (^{99m}Tc) succimer (DMSA) does not appear to exert any pharmacodynamic effects.

5.2 Pharmacokinetic properties

After intravenous administration technetium (^{99m}Tc) succimer (DMSA) is eliminated from the blood with a triphasic pattern in patients with normal renal function. The effective half-life of technetium (^{99m}Tc) succimer (DMSA) in blood is around 1 hour. The technetium (^{99m}Tc) succimer (DMSA) localizes in high concentrations in the renal cortex. Maximal localization occurs within 3-6 hours after intravenous injection, with about 40-50 % of the dose retained in the kidneys. Less than 3 % of the administered dose localizes in the liver. However, this amount can be increased significantly and renal distribution decreases in patients with impaired renal functions.

5.3 Preclinical safety data

Toxicity with repeated administration of 0.66 mg/kg/day succimer (DMSA) and 0.23 mg/kg/day of $SnCl_2$ over 14 days in rats was not observed. The dose usually administered to human is 0.14 mg/kg succimer (DMSA). This agent is not intended for regular or continuous administration. Mutagenicity studies and long-term carcinogenicity studies have not been carried out.

5.4 Radiation dosimetry

(^{99m}Tc) technetium decays with the emission of gamma radiation with a mean energy of 140 keV and a half-life of 6 hours, to (^{99m}Tc) technetium which can be regarded as quasi stable. For technetium (^{99m}Tc) succimer (DMSA) the effective dose equivalent resulting from an administered activity of 120 MBq is typically 1.92 mSv (per 70 kg individual).

According to ICRP (International Commission for Radiological Protection) the radiation doses absorbed by the patients are the following:

Absorbed dose per unit activity administered (mGy/MBq)

Organ	Adult	15 years	10 years	5 years	1 year
Adrenals	1.3E-02	1.6E-02	2.4E-02	3.5E-02	6.0E-02
Bladder wall	1.9E-02	2.4E-02	3.5E-02	5.1E-02	9.4E-02
Bone surfaces	3.5E-03	4.3E-03	6.4E-03	9.9E-03	1.9E-02
Breast	1.8E-03	1.8E-03	2.8E-03	4.5E-03	8.4E-03
Stomach wall	5.5E-03	6.3E-03	9.8E-03	1.3E-02	2.0E-02
Small intestine	5.2E-03	6.4E-03	1.0E-02	1.5E-02	2.5E-02
ULI wall	5.1E-03	6.3E-03	9.6E-03	1.4E-02	2.3E-02

LLI wall	3.2E-03	4.2E-03	6.7E-03	1.0E-02	1.8E-02
Kidneys	1.7E-01	2.1E-01	2.9E-01	4.2E-01	7.3E-01
Liver	9.7E-03	1.2E-02	1.8E-02	2.5E-02	4.1E-02
Lungs	2.5E-03	3.5E-03	5.2E-03	8.0E-03	1.4E-02
Ovaries	3.7E-03	4.6E-03	7.2E-03	1.1E-02	2.0E-02
Pancreas	9.0E-03	1.1E-02	1.6E-02	2.3E-02	3.7E-02
Red marrow	6.3E-03	7.5E-03	1.0E-02	1.4E-02	2.0E-02
Spleen	1.3E-02	1.7E-02	2.6E-02	3.8E-02	6.1E-02
Testes	1.8E-03	2.4E-03	3.9E-03	6.2E-03	1.2E-02
Thyroid	1.1E-03	1.9E-03	3.1E-03	5.1E-03	9.2E-03
Uterus	4.6E-03	5.5E-03	8.9E-03	1.3E-02	2.3E-02
Other tissue	3.0E-03	3.6E-03	5.2E-03	8.0E-03	1.4E-02
Effective dose equivalent (mSv/MBq)	**1.6E-02**	**1.9E-02**	**2.7E-02**	**4.0E-02**	**6.9E-02**

6 PHARMACEUTICAL PARTICULARS

6.1 List of excipients

Tin (II) chloride: 0.252mg, inositol, sodium chloride and nitrogen.

6.2 Incompatibilities

None known to date.

6.3 Shelf life

The expiry date for this kit is 12 months from the date of manufacture. The expiry date is stated on the label of each vial and on the carton. The labelled product should be injected within 4 hours after reconstitution.

6.4 Special precautions for storage

The freeze-dried product is to be stored at 2°C-8°C protected from light. The labelled product is to be stored at 15-25°C (room temperature). Storage should be in accordance with national regulations for radioactive materials.

6.5 Nature and contents of container

TechneScan® DMSA is supplied as five vials in a carton. 10 ml borosilicate glass vial (Type I, Ph.Eur.) closed with a bromotyl butyl rubber lyophilisation stopper and an aluminium crimp cap.

6.6 Instructions for use/labelling

6.6.1 Instructions for labelling

Add aseptically the required amount of Sodium Pertechnetate (^{99m}Tc) Injection (Fission or Non-Fission) in saline (maximum 3.7 GBq, 100 mCi), in a volume of 5 ml to a DMSA vial and shake for 1 minute. After 15 minutes at room temperature the preparation is ready for injection. The labelling yield generally exceeds 98%. Do not introduce air into the vial.

6.6.2 Instructions for quality control

Examine by TLC on silica gel coated glass-fibre sheets according Ph.Eur. Monograph 643. Apply 5 to 10 µl and develop 5-10 cm in methyl ethyl ketone R; the pertechnetate ion migrates near the solvent front, technetium succimer complex remains at the start. Requirement: pertechnetate ≤ 2 %. Percentage of the total radioactivity found in the spot corresponding to technetium succimer complex: ≥ 95 %.

6.6.3 The administration of radiopharmaceuticals creates risks for other persons from external radiation or contamination from spills of urine, vomiting, etc. National regulations for radioactive materials must be applied in the radiation protection precautions and waste disposal.

7 MANUFACTURED AND RELEASED BY:

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8 INFORMATION OF PRODUCT REGISTRATION HOLDER

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9 MARKETING AUTHORIZATION NUMBER

MAL19984356AZ

10 DATE OF APPROVAL/REVISION OF SPC

1 April 2024