

^{99m}Tc macrosalb

^{99m}Tc Technetium macrosalb (LyoMAA[®], Draximage[®], Pulmocis[®], MAASol[®])

1. Indications

Pulmonary perfusion scintigraphy.

As secondary indication ^{99m}Tc-albumin macroaggregates may be used for venoscintigraphy.

2. Preparation

Approved product, see summary of product characteristics (SmPC). ^{99m}Tc Technetium macrosalb is a pale-white suspension and should be carefully swirled once again prior to injection, in order to achieve a uniform distribution of the particles and in order to avoid formation of larger-sized aggregates.

3. Quality control

Particle sizes differ between the available drug products. The drug product complies with the European Pharmacopeia (PhEur) monograph for Technetium (^{99m}Tc) macrosalb injection.

Not more than 10 particles have a maximum dimension greater than 100 µm and no particle having a maximum dimension greater than 150 µm.

4. Interactions

Different medicinal products cause a change in the biological distribution of ^{99m}Tc Technetium macrosalb:

Chemotherapeutic agents such as methotrexate, bleomycin and cyclophosphamide.

Various drugs: Magnesiumsulphate, heroin, nitrofurantoin.

Heparin and bronchodilators improve bio distribution in the lungs.

5. Contraindications

- Hypersensitivity to the active substance or to any of the excipients
- Severe pulmonary hypertension

6. Adverse reactions

- Hypersensitivity reactions were reported with a wide array of symptoms ranging from mild skin reactions to anaphylactic shock, which however was only reported in isolated cases.
- Injection site reactions (e.g. cellulitis, inflammation, pain, erythema, swelling).
- Impairment of cardiac and circulatory functions in the form of changes in respiration, pulse, blood pressure and collapse, which may be related to vascular occlusion (very rarely).

7. Biodistribution & pharmacokinetics

Following intravenous administration, more than 90% of ^{99m}Tc-macrosalb is retained in lung capillaries and arterioles. Organ selectivity is directly related to particle size.

The aggregates remain in the lungs for a variable period of time, depending of structure, size and number of particles. Particles between 5-90 µm are eliminated from the lungs with a biological half-life of approximately 2-8h. The decrease in pulmonary concentration is caused by a mechanical break-down of the particles occluding the capillaries. About 30-45% of the injected radioactivity is excreted through the urine within 24 h.

8. Stability

The product has a shelf-life of about 18 months. After reconstitution the product is stable for about 12 h and has to be stored below 25°C (not in freezer).

9. Literature

- Jankovic DI et al. Alteration of the organ uptake if the (99m)Tc-radiopharmaceuticals, (99m)Tc-DPD(99m)Tc-DMSA, (99m)Tc-tin colloid and (99m)Tc-MAA, induced by the applied cytotoxic drugs methotrexate sodium and cyclophosphamide. Nucl Med Commun. 2005 May; 26(5):415-9.
- SmPC's MAASol®, LyoMAA®, Pulmocis® and Draximage®.