^{131}I iodohippurate

^{131}I Hippuran®, ^{131}IOH

1. Indications

^{131}I-iodohippurate is not approved in the Netherlands.

^{131}I-iodohippurate is a radiopharmaceutical used in diagnostics of kidneys dysfunction and urinary tract obstructions.

Renal scintigraphy utilizing this radiopharmaceutical allows the evaluation of:

- kidney blood flow resolution (effective renal plasma flow - ERPF)
- renal tubular function
- urine outflow from the pyelocalyceal system
- vesico-ureteral reflux (examination during miction)
- renal function impairment in transplanted kidney
- diagnostics of renovascular hypertension

2. Preparation

^{131}I-iodohippurate is supplied as a solution for injection.

3. Quality control

^{131}I-iodohippurate is mentioned in the European Pharmacopeia. See monograph Sodium Iodohippurate (^{131}I) Injection.

- pH = 6,0-8,5
- Radiochemical Purity is assessed by Thin Layer Chromatography.

Plate	TLC Silica gel GF254 plate
Test solution	Dissolve 1 g of potassium iodide in 10 ml of water, add 1 volume of this solution to 10 volumes of the preparation to be examined and use within 10 min of mixing. If necessary dilute with the reference solution to give a radioactive concentration sufficient for the detection method.
Reference solution with impurities	Dissolve 40 mg of 2-iodobenzoic acid and 40 mg of 2-iodohippuric acid in 4 ml of a 4 g/l solution of sodium hydroxide. Add 10 mg of potassium iodide and dilute to 10 ml with water
Mobile phase	Water: Glacial acetic acid: Butanol: Toluene = 1:4:20:80 (v/v/v/v)
Application	10 µl
Identification of the spots	Rf=0 Impurity C Rf=1 Impurity D Rr 2-[^{131}I]iodohippuric acid corresponding to reference solution.

Drying	In air
Detection	UV light of 254 nm
Limits	2-[^{131}I]iodohippuric acid: ≥ 96% Impurity C (2-iodobenzoic acid) ≤ 2% Impurtiy D (^{131}I-iodine) ≤ 2%

4. Interactions

It is not recommended to take diuretics before examination.

5. Adverse reactions

Rare: nausea, vomiting, rash, itch and hypotension.

6. Biodistribution & pharmacokinetics

After intravenous administration, ^{131}I-iodohippurate is rapidly excreted by the renal system. The maximum renal uptake occurs normally within 2-5 min of intravenous administration, depending on the patient hydration, extent of renal impairment, the nature of the kidneys disease and medication. Approximately two thirds of the compound binds reversibly with plasma proteins. The compound easily crosses cell membranes, renal excretion is mainly by tubular secretion (80%) and glomerular filtration (20%). The renal transit time and distribution of radiopharmaceutical depend on renal flow and the excretory ability of kidney tubules. Maximum tubular excretion of ^{131}I-iodohippurate (^{131}I) is around 76 mg/min or approximately 0,2 ml of plasma flow. More than 90% of ^{131}I-iodohippurate is taken up by the kidneys and instantly transferred to the bladder along with the urine. Approximately 50-75% is excreted within 25 min, 90-95% within 8 h. Hepatobiliary excretion is less than 0,4%. However in case of severe renal impairment, hepatobiliary excretion may increase to 5%.

7. Stability

The injection vials included in the kit having a shelf life of 24 h after the activity reference time of ^{111}In. After reconstitution: 6 h.

8. Literature

- SmPC Hippurate131I for injection, Polatom.
- Kengen et al. I-131 Hippuran for the estimation of renal plasma-flow requirements for radiochemical purity. Eur J of Nuc Med 1995: 22: 678-81.
- European Pharmacopeia 8.0 volume 1.