

## Calcitonin Salmon Nasal Solution

### DEFINITION

Calcitonin Salmon Nasal Solution is a solution of Calcitonin Salmon in a suitable diluent. It contains suitable preservatives, and is packaged in a form suitable for nasal administration so that the required dosage can be controlled as required. Each mL of Calcitonin Salmon Nasal Solution possesses an activity of NLT 80% and NMT 115% of that stated on the label.

### IDENTIFICATION

- **A.** The retention time of the major peak of the *Sample solution* corresponds to that of the *Standard solution*, as obtained in the Assay.

### ASSAY

#### Change to read:

#### PROCEDURE

**Solution A:** 3.26 mg/mL of tetramethylammonium hydroxide pentahydrate in water and acetonitrile (9:1). Adjust with phosphoric acid to a pH of 2.5.

**Solution B:** 1.45 mg/mL of tetramethylammonium hydroxide pentahydrate in acetonitrile and water (3:2). Adjust with phosphoric acid to a pH of 2.5.

**Mobile phase:** See Table 1.

Table 1

Time (min)	Solution A (%)	Solution B (%)
0	72	28
30	48	52
32	72	28
55	72	28

**Diluent:** 7.5 mg/mL of sodium chloride, 2 mg/mL of sodium acetate, and 2 mg/mL of glacial acetic acid in water

**System suitability stock solution:** Prepare a solution in *Solution A* containing about 0.2 mg/mL of USP Calcitonin Salmon Related Compound A RS and 0.2 mg/mL of USP Calcitonin Salmon RS. (IRA 1-Jan-2015)

**System suitability solution:** *System suitability stock solution* and *Solution A* (1:9)

**Standard stock solution:** 1.0 mg/mL of USP Calcitonin Salmon RS in *Solution A*

**Standard solution:** 0.1 mg/mL of USP Calcitonin Salmon RS from the *Standard stock solution* in *Solution A*

**Sample solution:** Nasal Solution in *Diluent* (1:9)

#### Chromatographic system

(See *Chromatography* <621>, *System Suitability*.)

**Mode:** LC

**Detector:** UV 220 nm

**Column:** 4.6-mm × 25-cm; packing L1

**Column temperature:** 65°

**Flow rate:** 1 mL/min

**Injection volume:** 200 µL

#### System suitability

**Samples:** *System suitability solution* and *Standard solution*

[NOTE—The relative retention times for calcitonin salmon and calcitonin salmon related compound A are 1.0 and 1.15, respectively.]

#### Suitability requirements

**Resolution:** NLT 3 between calcitonin salmon and calcitonin salmon related compound A, *System suitability solution*

**Tailing factor:** NMT 2.5, *Standard solution*

**Relative standard deviation:** NMT 3.0%, *Standard solution*

#### Analysis

**Samples:** *Standard solution* and *Sample solution*

Calculate the percentage of the labeled amount of calcitonin salmon (C<sub>145</sub>H<sub>240</sub>N<sub>44</sub>O<sub>48</sub>S<sub>2</sub>) in the portion of Nasal Solution taken:

$$\text{Result} = (r_U/r_S) \times (C_S/C_U) \times 100$$

$r_U$  = peak area of the *Sample solution*

$r_S$  = peak area of the *Standard solution*

$C_S$  = concentration of USP Calcitonin Salmon RS in the *Standard solution* (mg/mL)

$C_U$  = nominal concentration of calcitonin salmon in the *Sample solution* (mg/mL)

**Acceptance criteria:** 80%–115%

#### SPECIFIC TESTS

- **MICROBIAL ENUMERATION TESTS** <61> and **TESTS FOR SPECIFIED MICROORGANISMS** <62>: The total aerobic microbial count is NMT 10<sup>2</sup> cfu/g, and the total combined molds and yeasts count is NMT 5 × 10<sup>1</sup> cfu/g. It meets the requirements for absence of *Staphylococcus aureus* and *Pseudomonas aeruginosa*.

- **PH** <791>: 3.5–4.5

#### ADDITIONAL REQUIREMENTS

- **PACKAGING AND STORAGE:** Preserve in containers suitable for spraying the contents into the nasal cavities in a controlled individualized dosage. Store unopened containers in a refrigerator and opened containers at room temperature.
- **LABELING:** Label it to indicate that it is for intranasal administration only. The labeling also states that it has been prepared either with Calcitonin Salmon of synthetic origin or Calcitonin Salmon of rDNA origin. Label it to state that it is to be stored in a refrigerator, and that freezing is to be avoided. Label it to indicate the activity in USP Calcitonin Salmon Units/mL.
- **USP REFERENCE STANDARDS** <11>
  - USP Calcitonin Salmon RS
  - USP Calcitonin Salmon Related Compound A RS
  - N-Acetyl-cys<sup>1</sup>-calcitonin.
  - C<sub>146</sub>H<sub>243</sub>N<sub>44</sub>O<sub>49</sub>S<sub>2</sub> 3463