

ylamino)-1,4,4a,5,5a,6,11,12a-octa-3,5,6,10,12,12a-hexahydroxy-6-methyl-1,11-dioxo-2-naphthacenecarboxamide dihydrate. Oxytetracycline is produced by the growth of *Streptomyces rimosus*. It is so purified and dried that:

(i) Its potency is not less than 832 micrograms of oxytetracycline per milligram on an "as is" basis.

(ii) [Reserved]

(iii) Its moisture content is not less than 6 percent and not more than 9 percent.

(iv) Its pH in an aqueous suspension containing 10 milligrams per milliliter is not less than 4.5 and not more than 7.0.

(v) When calculated on an anhydrous basis its absorptivity at 353 nanometers relative to that of the oxytetracycline working standard similarly treated is 100±4 percent.

(vi) It gives a positive result to an identity test for oxytetracycline.

(vii) It is crystalline.

(2) *Labeling*. It shall be labeled in accordance with the requirements of § 432.5 of this chapter.

(3) *Requests for certification; samples*. In addition to complying with the requirements of § 431.1 of this chapter, each such request shall contain:

(i) Results of tests and assays on the batch for potency, moisture, pH, absorptivity, identity, and crystallinity.

(ii) Samples required: 10 packages, each containing approximately 300 milligrams.

(b) *Tests and methods of assay*—(1) *Potency*. Assay for potency by either of the following methods; however, the re-

sults obtained from the microbiological turbidimetric assay shall be conclusive.

(i) *Microbiological turbidimetric assay*. Proceed as directed in § 436.106 of this chapter, preparing the sample for assay as follows: Dissolve an accurately weighed sample in sufficient 0.1N hydrochloric acid to obtain a concentration of 1,000 micrograms of oxytetracycline per milliliter (estimated). Further dilute an aliquot of the stock solution with sterile distilled water to the reference concentration of 0.24 microgram of oxytetracycline per milliliter (estimated).

(ii) *Chemical assay*. Proceed as directed in § 436.320 of this chapter.

(2) [Reserved]

(3) *Moisture*. Proceed as directed in § 436.201 of this chapter.

(4) *pH*. Proceed as directed in § 436.202 of this chapter, using an aqueous suspension containing 10 milligrams per milliliter.

(5) *Absorptivity*. Determine the absorbance of the sample and standard solutions in the following manner: Dissolve approximately 50 milligrams each of the sample and standard in 250 milliliters of 0.1N hydrochloric acid. Transfer a 10-milliliter aliquot to a 100-milliliter volumetric flask and dilute to volume with 0.1N hydrochloric acid. Using a suitable spectrophotometer and 0.1N hydrochloric acid as the blank, determine the absorbance of each solution at 353 nanometers. Determine the percent absorptivity of the sample relative to the absorptivity of the standard using the following calculations:

$$\text{Percent relative absorptivity} = \frac{\text{Absorbance of sample} \times \text{Milligrams of standard}}{\text{Absorbance of standard} \times \text{Milligrams of sample}} \times \frac{\text{Potency of standard in micrograms per milligram}}{100 - m} \times \frac{10}{100 - m}$$

where: *m* = Percent moisture in the sample.

(6) *Identity*. To about 1 milligram of sample, add 2 milliliters of sulfuric acid; a light-red color is produced when oxytetracycline is present.

(7) *Crystallinity*. Proceed as directed in § 436.203(a) of this chapter.

[43 FR 11156, Mar. 17, 1978, as amended at 50 FR 19920, May 13, 1985]

§ 446.65a Sterile oxytetracycline.

(a) *Requirements for certification*—(1) *Standards of identity, strength, quality,*

and purity. Sterile oxytetracycline is [4S - (4 α ,4a α ,5 α ,5a α ,6 β ,12a α)] - 4 - (dimethylamino) - 1,4,4a,5,5a,6,11, 12a - octahydro - 3,5,6,10,12,12a - hexahydroxy - 6 - methyl - 1,11 - dioxo - 2 - naphthacene-carboxamide dihydrate. Oxytetracycline is produced by the growth of *Streptomyces rimosus*. It is so purified and dried that:

(i) Its potency is not less than 832 micrograms of oxytetracycline per milligram on an "as is" basis.

(ii) It is sterile.

(iii) It is nonpyrogenic.

(iv) [Reserved]

(v) It contains no depressor substances.

(vi) Its moisture content is not less than 6 percent and not more than 9 percent.

(vii) Its pH in an aqueous suspension containing 10 milligrams per milliliter is not less than 4.5 and not more than 7.0.

(viii) When calculated on an anhydrous basis, its absorptivity at 353 nanometers relative to that of the oxytetracycline working standard similarly treated, is 100 \pm 4 percent.

(ix) It gives a positive result to an identity test for oxytetracycline.

(x) It is crystalline.

(2) *Labeling.* It shall be labeled in accordance with the requirements of § 432.5 of this chapter.

(3) *Requests for certification; samples.* In addition to complying with the requirements of § 431.1 of this chapter, each such request shall contain:

(i) Results of tests and assays on the batch for potency, sterility, pyrogens, depressor substances, moisture, pH, absorptivity, identity, and crystallinity.

(ii) Samples required:

(a) For all tests except sterility: 10 packages, each containing approximately 300 milligrams.

(b) For sterility testing: 20 packages, each containing approximately 300 milligrams.

(b) *Tests and methods of assay—(1) Potency.* Assay for potency by either of the following methods; however, the results obtained from the microbiological turbidimetric assay shall be conclusive.

(i) *Microbiological turbidimetric assay.* Proceed as directed in § 436.106 of this

chapter, preparing the sample for assay as follows: Dissolve an accurately weighed sample in sufficient 0.1N hydrochloric acid to obtain a concentration of 1,000 micrograms of oxytetracycline per milliliter (estimated). Further dilute an aliquot of the stock solution with sterile distilled water to the reference concentration of 0.24 microgram of oxytetracycline per milliliter (estimated).

(ii) *Chemical assay.* Proceed as directed in § 436.320 of this chapter.

(2) *Sterility.* Proceed as directed in § 436.20 of this chapter, using the method described in paragraph (e)(1) of that section, except use diluting fluid D in lieu of diluting fluid A.

(3) *Pyrogens.* Proceed as directed in § 436.32(b) of this chapter, using a solution containing 5.0 milligrams of oxytetracycline per milliliter prepared by dissolving 40 milligrams in 2.0 milliliters of 0.1N hydrochloric acid and diluting with the required amount of sterile, pyrogen-free distilled water.

(4) [Reserved]

(5) *Depressor substances.* Proceed as directed in § 436.35 of this chapter, preparing the sample by dissolving 40 milligrams in 2.0 milliliters of 0.1N hydrochloric acid and diluting with the required amount of sterile distilled water.

(6) *Moisture.* Proceed as directed in § 436.201 of this chapter.

(7) *pH.* Proceed as directed in § 436.202 of this chapter, using an aqueous suspension containing 10 milligrams per milliliter.

(8) *Absorptivity.* Determine the absorbance of the sample and standard solutions in the following manner: Dissolve approximately 50 milligrams each of the sample and standard in 250 milliliters of 0.1N hydrochloric acid. Transfer a 10-milliliter aliquot to a 100-milliliter volumetric flask, and dilute to volume with 0.1N hydrochloric acid. Using a suitable spectrophotometer and 0.1N hydrochloric acid as the blank, determine the absorbance of each solution at 353 nanometers. Determine the percent absorptivity of the sample relative to the absorptivity of the standard using the following calculations:

$$\text{Percent relative absorptivity} = \frac{\text{Absorbance of sample} \times \text{Milligrams of standard}}{\text{Absorbance of standard} \times \text{Milligrams of sample}} \times \frac{\text{Potency of standard in micrograms per milligram}}{100 - m} \times \frac{10}{100 - m}$$

where: *m* = Percent moisture in the sample.

(9) *Identity.* To about 1 milligram of sample, add 2 milliliters of sulfuric acid; a light-red color is produced when oxytetracycline is present.

(10) *Crystallinity.* Proceed as directed in § 436.203(a) of this chapter.

[43 FR 11156, Mar. 17, 1978; 43 FR 34456, Aug. 4, 1978, as amended at 46 FR 60568, Dec. 11, 1981; 50 FR 19920, May 13, 1985]

§ 446.66 Oxytetracycline calcium.

(a) *Requirements for certification—(1) Standards of identity, strength, quality, and purity.* Oxytetracycline calcium is [4S-(4 α , 4a α , 5 α , 5a α , 6 β , 12 α β)]-4-(dimethylamino)-1,4,4a,5,5a,6,11, 12a-octahydro-3,5,6,10,12,12a-hexa hydroxy-6-methyl-1,11-dioxo-2-naphthacene-carboxamide calcium salt. Oxytetracycline is produced by the growth of *Streptomyces rimosus*. It is so purified and dried that:

(i) Its potency is equivalent to not less than 865 micrograms of oxytetracycline per milligram on an anhydrous basis.

(ii) [Reserved]

(iii) Its moisture content is not less than 8 percent and not more than 14 percent.

(iv) Its pH in an aqueous suspension containing 25 milligrams per milliliter is not less than 6.0 and not more than 8.0

(v) Its calcium content as the sulfated ash is not less than 3.85 percent and not more than 4.35 percent on an anhydrous basis.

(vi) It gives a positive identity test.

(vii) It is crystalline.

(2) *Labeling.* It shall be labeled in accordance with the requirements of § 432.5 of this chapter.

(3) *Requests for certification; samples.* In addition to complying with the requirements of § 431.1 of this chapter, each such request shall contain:

(i) Results of tests and assays on the batch for potency, moisture, pH, calcium content, identity, and crystallinity.

(ii) Samples required: 10 packages, each containing approximately 300 milligrams.

(b) *Tests and methods of assay—(1) Potency.* Assay for potency by either of the following methods; however, the results obtained from the microbiological turbidimetric assay shall be conclusive.

(i) *Microbiological turbidimetric assay.* Proceed as directed in § 436.106 of this chapter, preparing the sample for assay as follows: Dissolve an accurately weighed sample in sufficient 0.1*N* hydrochloric acid to obtain a concentration of 1,000 micrograms of oxytetracycline per milliliter (estimated). Further dilute an aliquot of the stock solution with sterile distilled water to the reference concentration of 0.24 microgram of oxytetracycline per milliliter (estimated).

(ii) *Chemical assay.* Proceed as directed in § 436.320 of this chapter.

(2) [Reserved]

(3) *Moisture.* Proceed as directed in § 436.201 of this chapter.

(4) *pH.* Proceed as directed in § 436.202 of this chapter, using a saturated aqueous suspension containing 25 milligrams per milliliter.

(5) *Calcium content.* Proceed as directed in § 436.207(b) of this chapter, except from the weight of residue obtained calculate the calcium content as follows:

$$\text{Percent calcium} = \frac{\text{Weight of residue} \times 0.29435 \times 100 \times 100}{\text{Weight of sample (anhydrous basis)} \times (100 - m)}$$