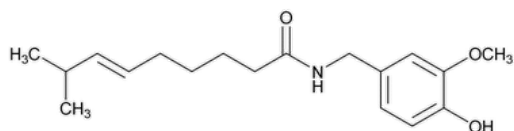


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Capsaicin



$C_{18}H_{27}NO_3$ 305.41

6-Nonenamide, (E)-N-[(4-Hydroxy-3-methoxy-phenyl)methyl]-8-methyl.

(E)-8-Methyl-N-vanillyl-6-nonenamide CAS RN®: 404-86-4; UNII: S07O44R1ZM.

» Capsaicin contains not less than 90.0 percent and not more than 110.0 percent of the labeled percentage of total capsaicinoids. The content of capsaicin ($C_{18}H_{27}NO_3$) is not less than 55 percent, and the sum of the contents of capsaicin and dihydrocapsaicin ($C_{18}H_{29}NO_3$) is not less than 75 percent, and the content of other capsaicinoids is not more than 15 percent, all calculated on the dried basis.

[CAUTION—Handle Capsaicin with care. Prevent inhalation of particles of it and prevent its contact with any part of the body.]

Packaging and storage—Preserve in tight containers, protected from light, and store in a cool place.

Labeling—Label it to state the percentage content of total capsaicinoids.

USP REFERENCE STANDARDS (11).—

[USP Capsaicin RS](#)

[USP Dihydrocapsaicin RS](#)

Identification—Prepare a test solution of Capsaicin in methanol containing 1 mg per mL. Prepare a Standard solution of [USP Capsaicin RS](#) in methanol containing 1 mg per mL. Separately apply 10-μL portions of the test solution and the Standard solution to a thin-layer chromatographic plate (see [Chromatography \(621\)](#)) coated with a 0.25-mm layer of chromatographic silica gel mixture. Develop the chromatograms in a solvent system consisting of a mixture of ether and methanol (19:1) until the solvent front has moved about three-fourths of the length of the plate. Remove the plate from the chamber, and allow it to air-dry. Spray the plate with a 0.5% solution of 2,6-dibromoquinone-chlorimide in methanol, allow to stand in a chamber containing ammonia fumes, and examine the chromatograms: the blue color and the R_f value of the principal spot obtained from the test solution correspond to those properties of the principal spot obtained from the Standard solution.

MELTING RANGE (741): between 57° and 66°, but the range between beginning and end of melting does not exceed 5°.

LOSS ON DRYING (731): Dry it in vacuum over phosphorus pentoxide at 40° for 5 hours: it loses not more than 1.0% of its weight.

RESIDUE ON IGNITION (281): not more than 1.0%.

Content of capsaicin, dihydrocapsaicin, and other capsaicinoids—

Mobile phase—Prepare a mixture of diluted phosphoric acid (1 in 1000) and acetonitrile (600:400). Pass through a filter having a porosity of 0.5 μm or finer, and degas. Make adjustments if necessary (see [System Suitability](#) under [Chromatography \(621\)](#)).

Standard capsaicin solution—Quantitatively dissolve an accurately weighed quantity of [USP Capsaicin RS](#) in methanol to obtain a solution having a known concentration of about 0.1 mg per mL.

Standard dihydrocapsaicin solution—Quantitatively dissolve an accurately weighed quantity of [USP Dihydrocapsaicin RS](#) in methanol to obtain a solution having a known concentration of about 0.025 mg per mL.

Test solution—Transfer about 25 mg of Capsaicin, accurately weighed, to a 250-mL volumetric flask, dilute with methanol to volume, and mix.

Chromatographic system (see [Chromatography \(621\)](#))—The liquid chromatograph is equipped with a 281-nm detector and a 4.6-mm × 25-cm column that contains 5-μm packing L11 and is maintained at a constant temperature of about 30°. Adjust the flow rate to obtain a retention time of about 20 minutes for the main capsaicin peak. Chromatograph the *Standard capsaicin solution*, and record the peak responses as directed for *Procedure*: the relative standard deviation for replicate injections is not more than 2%.

Procedure—Separately inject equal volumes (about 20 μL) of the *Standard capsaicin solution*, the *Standard dihydrocapsaicin solution*, and the *Test solution* into the chromatograph, record the chromatogram for a period of time that is twice that of the retention time of capsaicin, and measure the areas of the responses for all of the peaks. Calculate the percentage of capsaicin ($C_{18}H_{27}NO_3$) in the portion of Capsaicin taken by the formula:

$$25,000(C/W)(r_U/r_S)$$

in which C is the concentration, in mg per mL, of [USP Capsaicin RS](#) in the *Standard capsaicin solution*; W is the weight, in mg, of Capsaicin taken to prepare the *Test solution*; and r_U and r_S are the capsaicin peak responses obtained from the *Test solution* and the *Standard capsaicin solution*.

solution, respectively. Not less than 55% is found. Calculate the percentage of dihydrocapsaicin (C₁₈H₂₉NO₃) in the portion of Capsaicin taken by the formula:

$$25,000(C/W)(r_U/r_S)$$

in which C is the concentration, in mg per mL, of [USP Dihydrocapsaicin RS](#) in the *Standard dihydrocapsaicin solution*; W is the weight, in mg, of Capsaicin taken to prepare the *Test solution*; and r_U and r_S are the dihydrocapsaicin peak responses obtained from the *Test solution* and the *Standard dihydrocapsaicin solution*, respectively. The sum of the percentage of capsaicin found and of the percentage of dihydrocapsaicin found is not less than 75%. Using the chromatograms obtained from the *Standard capsaicin solution* and the *Test solution*, calculate the percentage of other capsaicinoids in the portion of Capsaicin taken by the formula:

$$25,000(C/W)(r_T/r_S)$$

in which C is the concentration, in mg per mL, of [USP Capsaicin RS](#) in the *Standard capsaicin solution*; W is the weight, in mg, of Capsaicin taken to prepare the *Test solution*; r_T is the sum of the peak responses of the capsaicinoids other than capsaicin and dihydrocapsaicin in the chromatogram obtained from the *Test solution*; and r_S is the capsaicin peak response obtained from the *Standard capsaicin solution*. Not more than 15% of other capsaicinoids is found.

Auxiliary Information - Please [check for your question in the FAQs](#) before contacting USP.

Topic/Question	Contact	Expert Committee
CAPSAICIN	Nam-Cheol Kim Scientific Liaison	BDSHM2020 Botanical Dietary Supplements and Herbal Medicines

Chromatographic Database Information: [Chromatographic Database](#)

Most Recently Appeared In:

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