

## NORDIHYDROGUAIARETIC ACID

*Prepared at the 17th JECFA (1973), published in FNP 4 (1978) and in FNP 52 (1992). Metals and arsenic specifications revised at the 63rd JECFA (2004). No ADI was allocated at the 17th JECFA (1973)*

### SYNONYMS

NDGA

### DEFINITION

Chemical names

4,4'-(2,3-Dimethyltetramethylene)-dipyro-catechol; 1,4-dipyro-catechol-2,3-dimethyl-butane; nordihydroguaiaretic acid;  $\beta$ ,gamma -dimethyl-alpha,delta-bis(3,4-dihydroxyphenyl) butane

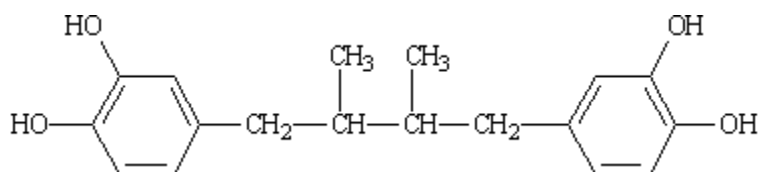
C.A.S. number

500-38-9

Chemical formula

C<sub>18</sub>H<sub>22</sub>O<sub>4</sub>

Structural formula



Formula weight

302.36

Assay

Not less than 95% and not more than 102%

### DESCRIPTION

White to greyish-white crystalline solid and may be prepared from the evergreen desert shrub, *Larrea divaricata*, (Fam. *Zygophyllaceae*)

### FUNCTIONAL USES

Antioxidant

### CHARACTERISTICS

#### IDENTIFICATION

Solubility (Vol. 4)

Freely soluble in ethanol and ether, and in propylene glycol at 116°

Melting point (Vol. 4)

About 184°

Colour reactions

Passes test  
See description under TESTS

#### PURITY

Lead (Vol. 4)

Not more than 2 mg/kg  
Determine using an atomic absorption technique appropriate to the specified level. The selection of sample size and method of sample preparation may be based on the principles of the method described in Volume 4, "Instrumental Methods."

## TESTS

### IDENTIFICATION TESTS

#### Colour reactions

Add 2 ml of ferric chloride TS, ethanolic and 2 ml of 0.2% of 2,2'-bipyridine in absolute ethanol to 5 ml of 0.5% solution of the sample in 50% ethanol. A deep cherry-red colour appears

To 5 ml of 1% solution of the sample in 75% ethanol, add 1 ml of strong ammonia TS. A yellow colour develops

To 10 ml of 0.5% solution of the sample in 50% ethanol, add 1.5 ml of 1% barium hydroxide ( $\text{Ba}(\text{OH})_2 \cdot \text{H}_2\text{O}$ ) in boiled water. A deep blue colour develops which is stable for approximately 1 h

To 10 ml of 10% sodium hydroxide, add 1 ml of 0.5% solution of the sample in 50% ethanol. A rose-red colour develops

#### **METHOD OF ASSAY**

Weigh 1.00 g of the sample. Dilute with methanol so that the final concentration will be 1 mg of the sample per 100 ml of solution. Read the absorbance at 284 nm in a 1 cm quartz cell.

Calculate the % nordihydroguaiaretic acid from:

$$\frac{\text{Absorbance} - 0,008}{\text{weight of sample} \times 0.21} \times 100$$

where

a = the obtained absorbance

W = the weight of the sample