

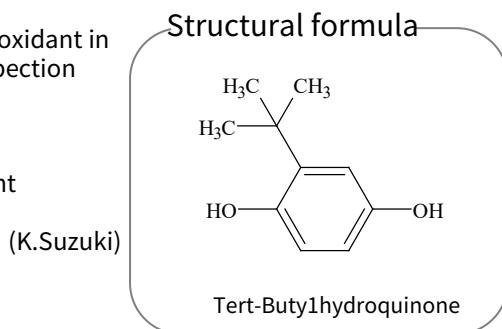
# Analysis of Tert Butylhydroquinone (TBHQ) in Foods by HPLC

This application describes the analysis of tert butylhydroquinone (TBHQ).

Although TBHQ is not recognized as a food additive, it is used as a phenolic antioxidant in oils and fats in some countries. The test method is described in Food Safety Inspection Notification No. 0303001.

In this application, sample analysis was made using a fluorescence detector in accordance with the test method.

It is also possible to analyze phenolic antioxidants simultaneously using gradient separation.

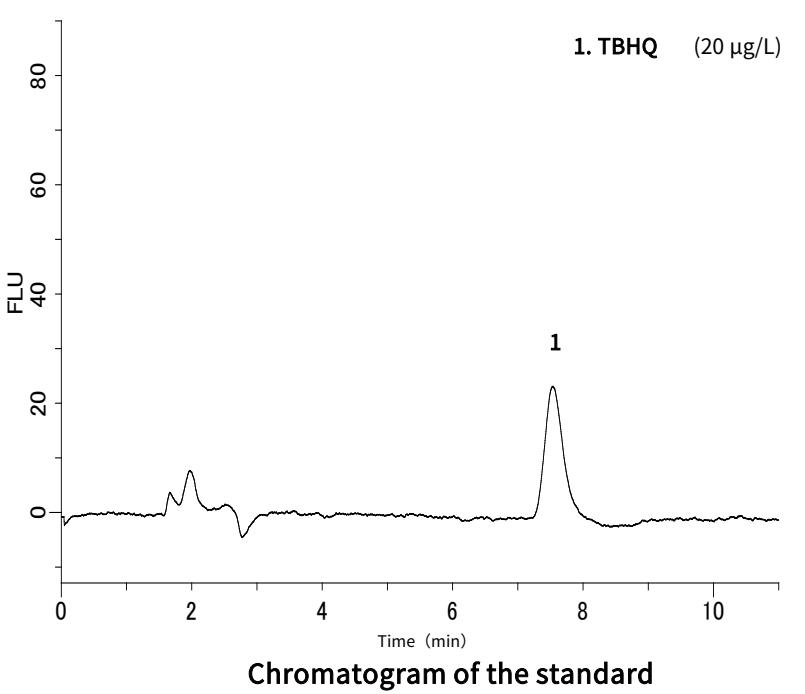


Structures are created using Chemistry 4-D Draw which is provided By ChemInnovation Software, Inc.

## <Representative phenolic antioxidants>

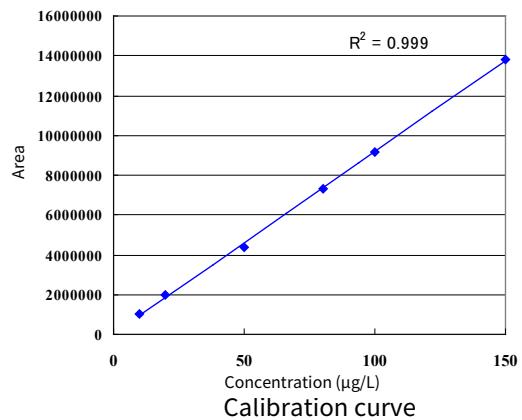
Dibutylhydroxytoluene (BHT)	Octyl Gallate (OG)
Dibutylhydroxyanisole (BHA)	Lauryl gallate (DG)
Nordihydroguaiaretic acid (NDGA)	Propyl gallate (PG)
2,4,5-trihydroxybutyrophenoine (THBP)	
4-Hydroxymethyl-2,6-di-tert butylphenol (HMBP)	

## Examples of TBHQ analysis



### HPLC conditions

Column	: Inertsil ODS-SP (5 µm, 150 x 4.6 mm I.D.)
Eluent	: A) CH <sub>3</sub> CN B) CH <sub>3</sub> OH C) 5% aqueous acetic acid A/B/C = 20/20/60 v/v/v, 1.0 mL/min
Temperature	: 40 °C
Detector	: FL Ex 293 nm Em 332 nm
Injection volume	: 10 µL



# Example of pretreatment

## Vegetable oils

### Sample

1 g

### Extraction

- 10 mL of hexane-saturated acetonitrile containing L-ascorbate palmitate
- Shake 1 min
- Centrifugal separation at 3000 rpm, 10 min
- Acetonitrile layer sorting

### Refining

- 10 mL of n-hexane
  - Shake 1 min
  - Centrifugal separation 3000 rpm, 10 min
  - Acetonitrile layer sorting
- 0.45 µm filter.

### HPLC-FL

## Butter

### Sample

1 g

### Extraction

- Anhydrous sodium sulfate 1 g
- 10 mL of n-hexane
- 10 mL of hexane-saturated acetonitrile containing L-ascorbate palmitate
- Shake 1 min
- Centrifugal separation at 3000 rpm, 10 min
- Acetonitrile layer sorting

### Refining

- 10 mL of n-hexane
  - Shake 1 min
  - Centrifugal separation at 3000 rpm, 10 min
  - Acetonitrile layer sorting
- 0.45 µm filter.

### HPLC-FL

## Chewing gum

### Sample

5 g

### Extraction

- Anhydrous sodium sulfate 5 g
- Shake 1 min
- Ethyl acetate 30 mL
- FILTER

Filtrate

Residue

### Extraction

- Ethyl acetate 30 mL
- Shake 1 min
- FILTER

- Filtrate recovery
- Dry under reduced pressure at 40 °C

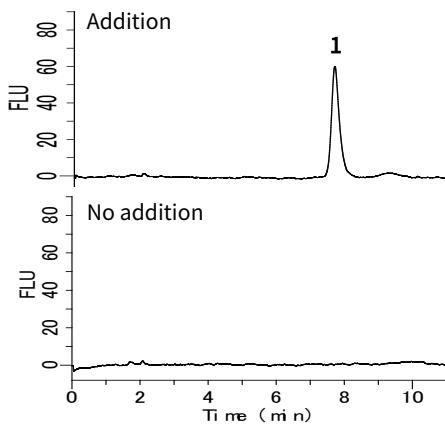
- 10 mL of hexane-saturated acetonitrile containing L-ascorbate palmitate
- Centrifugal separation at 3000 rpm, 10 min
- 10-mL aliquot of the acetonitrile layer

### Extraction

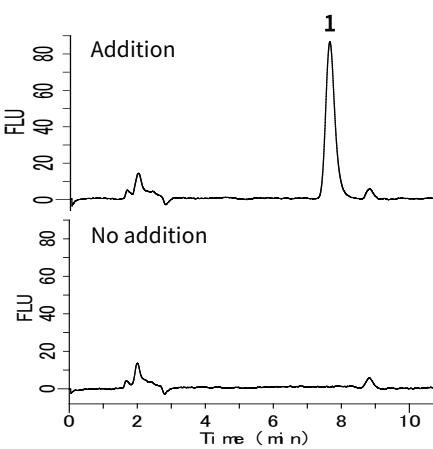
- 10 mL of n-hexane
  - Shake 1 min
  - Centrifugal separation at 3000 rpm, 10 min
  - Acetonitrile layer sorting
- 0.45 µm filter.

### HPLC-FL

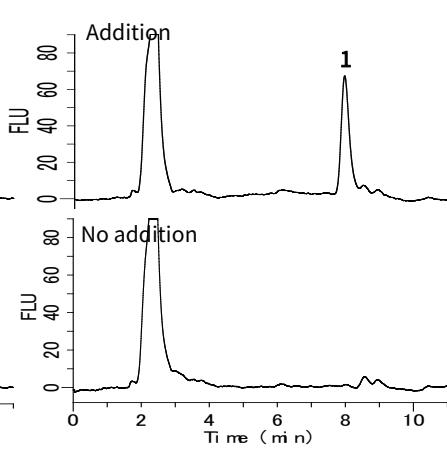
## Vegetable oil extract



## Butter extract



## Chewing gum extract



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