

# Certificate of Analysis

[www.tocris.com](http://www.tocris.com)

**Product Name:** Gambogic acid

**Catalog No.:** 3590

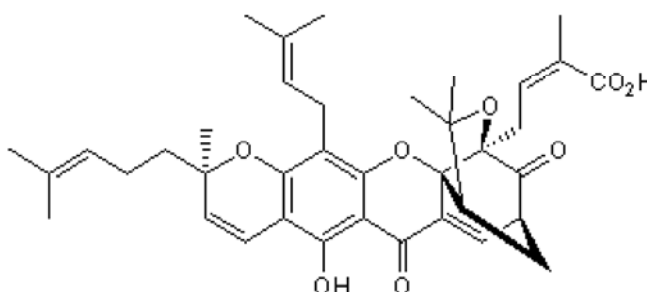
**Batch No.:** 2

**CAS Number:** 2752-65-0

**IUPAC Name:** (2Z)-2-Methyl-4-[(1R,3aS,5S,11R,14aS)-3a,4,5,7-tetrahydro-8-hydroxy-3,3,11-trimethyl-13-(3-methyl-2-butenyl)-11-(4-methyl-3-pentenyl)-7,15-dioxo-1,5-methano-1H,3H,11H-furo[3,4-g]pyrano[3,2-b]xanthen-1-yl]-2-butenic acid

## 1. PHYSICAL AND CHEMICAL PROPERTIES

**Batch Molecular Formula:** C<sub>38</sub>H<sub>44</sub>O<sub>8</sub>  
**Batch Molecular Weight:** 628.75  
**Physical Appearance:** Orange solid  
**Solubility:** DMSO to 75 mM  
 ethanol to 100 mM  
**Storage:** Store at -20°C  
**Batch Molecular Structure:**



## 2. ANALYTICAL DATA

**<sup>1</sup>H NMR:** Consistent with structure  
**Mass Spectrum:** Consistent with structure  
**Optical Rotation:** [α]<sub>D</sub> = -611 (Concentration = 0.2, Solvent = Chloroform)  
**Microanalysis:**

|             | Carbon | Hydrogen | Nitrogen |
|-------------|--------|----------|----------|
| Theoretical | 72.59  | 7.05     |          |
| Found       | 72.71  | 7.12     |          |

Caution - Not Fully Tested • Research Use Only • Not For Human or Veterinary Use

**bio-techne.com**  
[info@bio-techne.com](mailto:info@bio-techne.com)  
[techsupport@bio-techne.com](mailto:techsupport@bio-techne.com)

**North America**  
 Tel: (800) 343 7475

**China**  
[info.cn@bio-techne.com](mailto:info.cn@bio-techne.com)  
 Tel: +86 (21) 52380373

**Europe Middle East Africa**  
 Tel: +44 (0)1235 529449

**Rest of World**  
[www.tocris.com/distributors](http://www.tocris.com/distributors)  
 Tel: +1 612 379 2956

**Product Name:** Gambogic acid

**Catalog No.:** 3590

**Batch No.:** 2

**CAS Number:** 2752-65-0

**IUPAC Name:** (2Z)-2-Methyl-4-[(1R,3aS,5S,11R,14aS)-3a,4,5,7-tetrahydro-8-hydroxy-3,3,11-trimethyl-13-(3-methyl-2-butenyl)-11-(4-methyl-3-pentenyl)-7,15-dioxo-1,5-methano-1H,3H,11H-furo[3,4-g]pyrano[3,2-b]xanthen-1-yl]-2-butenic acid

**Description:**

Gambogic acid is an apoptosis inducer in several tumor cell lines including T47D cells. Activates caspases ( $EC_{50}$  values are 0.78 - 1.64  $\mu$ M) and competitively inhibits antiapoptotic Bcl-2 family proteins ( $IC_{50}$  values are 1.47, 1.21, 2.02, 0.66, 1.06 and 0.79  $\mu$ M for Bcl-XL, Bcl-2, Bcl-W, Bcl-B, Bfl-1 and Mcl-1 respectively). Reverses gefitinib-resistance in mice bearing tumors with EGFR-T790M mutation. Also blocks  $K_{ir}2.1$  channels ( $EC_{50} \leq 100$  nM).

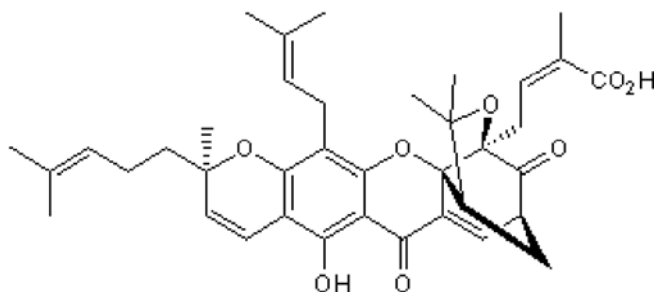
**Physical and Chemical Properties:**

Batch Molecular Formula:  $C_{38}H_{44}O_8$

Batch Molecular Weight: 628.75

Physical Appearance: Orange solid

**Batch Molecular Structure:**



**Storage:** Store at -20°C

**Solubility & Usage Info:**

DMSO to 75 mM  
ethanol to 100 mM

**Stability and Solubility Advice:**

Some solutions can be difficult to obtain and can be encouraged by rapid stirring, sonication or gentle warming (in a 45-60°C water bath).

Information concerning product stability, particularly in solution, has rarely been reported and in most cases we can only offer a general guide. Our standard recommendations are:

**SOLIDS:** Provided storage is as stated on the product label and the vial is kept tightly sealed, the product can be stored for up to 6 months from date of receipt.

**SOLUTIONS:** We recommend that stock solutions, once prepared, are stored aliquoted in tightly sealed vials at -20°C or below and used within 1 month. Wherever possible solutions should be made up and used on the same day.

**References:**

**Wang *et al*** (2015) Combined therapy with EGFR TKI and gambogic acid for overcoming resistance in EGFR-T790M mutant lung cancer. *Oncol.Lett.* **10** 2063. PMID: 26622796.

**Zaks-Makhina *et al*** (2009) Specific and slow inhibition of the  $K_{ir}2.1$   $K^+$  channel by Gambogic acid. *J.Biol.Chem.* **284** 15432. PMID: 19366693.

**Qi *et al*** (2008) Anti-invasive effect of gambogic acid in MDA-MB-231 human breast carcinoma cells. *Biochem.Cell Biol.* **86** 386. PMID: 18923540.

Caution - Not Fully Tested • Research Use Only • Not For Human or Veterinary Use

**bio-techne.com**

info@bio-techne.com  
techsupport@bio-techne.com

**North America**

Tel: (800) 343 7475

**China**

info.cn@bio-techne.com  
Tel: +86 (21) 52380373

**Europe Middle East Africa**

Tel: +44 (0)1235 529449

**Rest of World**

www.tocris.com/distributors  
Tel: +1 612 379 2956