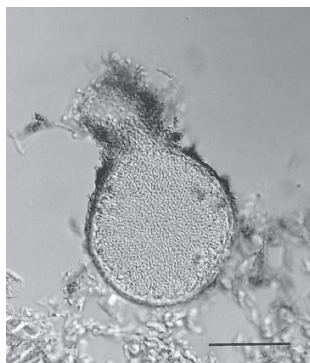


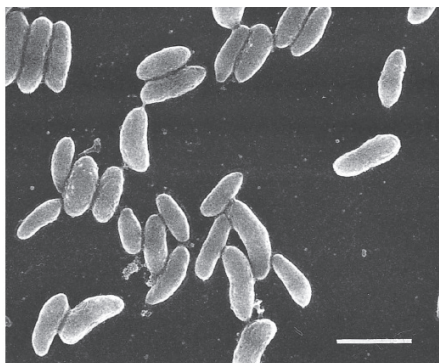
Chlorogentisylquinone

1. Discovery, producing organism and structure^{1,2)}

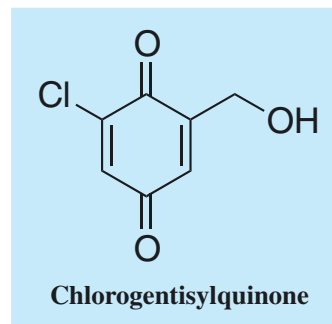
Chlorogentisylquinone was isolated from the culture broth of the fungal strain *Phoma* sp. FOM-8108 taken from a marine environment and found to be a neutral sphingomyelinase (nSMase) inhibitor.



Conidioma, Bar: 50 μm



Conidia, Bar: 5 μm



Phoma sp. FOM-8108

2. Physical data¹⁾

Brown needles. $C_7H_5O_3Cl$; mol wt 171.99. Sol. in MeOH, acetone, EtOAc, $CHCl_3$. Insol. in H_2O , hexane.

3. Biological activity¹⁾

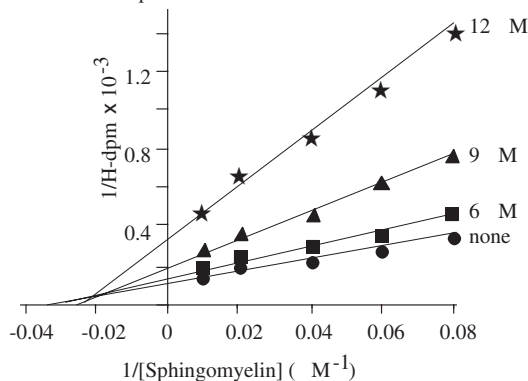
1) Inhibition of sphingomyelinase

Chlorogentisylquinone inhibited the nSMase activity of rat brain membranes in a dose-dependent manner with an IC_{50} value of 1.2 μM, while it showed no inhibitory effect on acid sphingomyelinase activity even at a concentration of 100 μM.

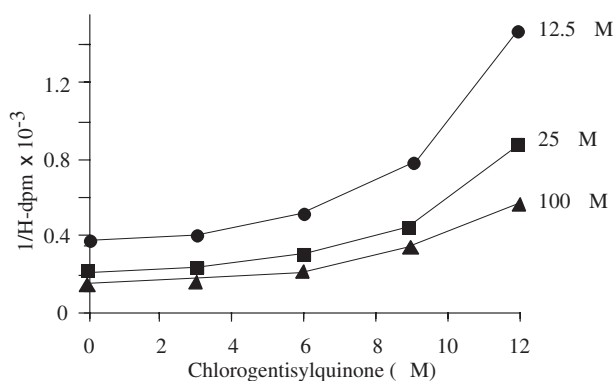
2) Mechanism of nSMase inhibition

The Lineweaver-Burk plots showed that chlorogentisylquinone inhibited nSMase in a mixed manner with respect to substrate sphingomyelin. The Dixon plots were nonlinear, that is, the inhibition appeared to synergistically increase as chlorogentisylquinone increased.

Lineweaver-Burk plots



Dixon plots



3) Antimicrobial activity

Test organism	Inhibition zone (φmm) 1.0 mg/ml
<i>Bacillus subtilis</i> KB27	13
<i>Staphylococcus aureus</i> KB210	9
<i>Micrococcus luteus</i> KB212	9
<i>Mycobacterium smegmatis</i> KB42	—
<i>Escherichia coli</i> KB213	9
<i>Escherichia coli</i> KB176	9
<i>Pseudomonas aeruginosa</i> KB105	—
<i>Xanthomonas oryzae</i> KB88	9
<i>Bacteroides fragilis</i> KB169	—
<i>Acholeplasma laidlawii</i> KB174	10
<i>Pyricularia oryzae</i> KF180	—
<i>Aspergillus niger</i> KF103	—
<i>Mucor racemosus</i> KF223	—
<i>Candida albicans</i> KF1	—
<i>Saccharomyces cerevisiae</i> KF26	—

10 μg/6 mm disk, —, No inhibition

4) Cytotoxic activity

Chlorogentisylquinone exhibited cytotoxicity against P388 cells with an IC₅₀ value of 7.6 μM.

4. References

- [795] R. Uchida, *et al.*, *J. Antibiot.* **54**, 882-889 (2001)
- [804] Y. Yamaguchi, *et al.*, *Mycoscience* **43**, 127-133 (2002)