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# Dioctyl phthalate, and antibacterial compound from the marine brown alga – *Sargassum wightii*

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## Abstract

Chloroform-methanol (2:1) extracts of the marine brown alga *Sargassum wightii* (Grev.) J. Ag. yielded a compound with antibacterial activity. The compound, purified by silica gel column and preparative thin layer chromatography, was determined as dioctyl phthalate from spectroscopic data.

## Introduction

Antibacterial activity of marine algal extracts has been reported by many workers including species collected from India (Rao *et al.*, 1984; Padmini srinivasa Rao *et al.*, 1986; Sastry and Rao, 1994). A recent paper by Sastry and Rao (1994) records the antibacterial property of extracts of *Sargassum wightii* (Grev.) J. Ag. The major active compound has now been isolated and is reported in this communication.

## Materials and methods

The collection of *Sargassum wightii* has been described by Sastry and Rao (1994).

The lipid fraction from *S. wightii* was obtained by extraction with chloroform:methanol (2:1) using the method of Padmini srinivasa Rao *et al.*, (1986). The extract was fractionated by passage through a column of silica gel, the antibacterial fraction was eluted with ethyl acetate. Purification of this fraction was achieved by preparative thin-layer chromatography on silica gel G plates, 500 $\mu$m, using benzene-ethyl acetate (3:1) as the developing solvent. The active compound (Rf value 0.63) was eluted from the chromatogram with ethyl acetate.

All solvents were redistilled prior to use.

## Results and discussion

The compound isolated by preparative thin layer chromatography from the lipid fraction of *S. wightii* was active against *Staphylococcus aureas, Proteus vulgaris, Escherichia coli, Salmonella typhi, Salmonella paratyphi A, Salmonella typhimurium* and *Pseudomonas aeruginosa.*

The electron impact mass spectrum (70 ev) of the isolated compound showed the molecular ion at M/z 390; other important ions were detected at M/z 279, 167 and 149 (base peak). This spectrum is consistent with that of dioctyl phthalate. Hydrolysis of the compound in 1 M HCl produced phthalic acid. The identity of the substance isolated from *S. wightii* as dioctyl phthalate was confirmed from spectroscopic data ($^1$H and $^{13}$C NMR, UV, IR), which were compared with data obtained with authentic samples.

Other algal species collected from the same location did not show any antibacterial activity in the crude lipid extracts (Sastry & Rao, 1994). This confirms that the antibacterial compound extracted and purified from *S. wightii* was not an impurity taken up by the alga from the environment.

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