NOTE

PHYTOTOXIC PROPERTIES OF CAERULOMYCIN AND SOME OF ITS DERIVATIVES

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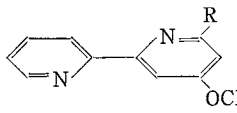
The isolation from *Streptomyces caeruleus* BALDACCI of caerulomycin, a new antibiotic active primarily against fungi, was reported by FUNK and DIVEKAR[1]. Recently, caerulomycin has been shown to be 4-methoxy-2, 2′-dipyridyl-6-*syn*-aldoxime (I) by chemical and spectroscopic studies[2].

We now wish to report the phytotoxic properties of caerulomycin and some of its derivatives *viz.* caerulomyconitrile (II), caerulomycamide (III) and caerulomycic acid (IV). 2,2′-Dipyridyl and fusaric acid (a well known wilting toxin) were also tested along with the above mentioned compounds for purposes of comparison.



I R=CH : NOH
II R=C : N
III R=$CONH_2$
IV R=COOH

The biological assay was run according to the technique used by HODGSON *et al.*[3] in the course of their detailed studies of wilting phenomena. Cuttings of Bonny Best tomato plants selected for uniformity of size and leaf area were used in all the experiments. Typical wilting symptoms indistinguishable from those caused by fusaric acid were observed in all the experiments whereas the control plants remained unaffected. Table 1 gives the summary of results obtained. Caerulomycic acid showed the maximum wilting properties and caerulomyconitrile was the least toxic.

Preliminary studies suggest that the phytotoxic properties of caerulomycin and its derivatives may be associated with their ability to chelate heavy metals and is similar to that shown, though at higher concentrations, by 2,2′-dipyridyl itself. TABER and VINING[4] have also made similar observations in the course of their studies on the mode of action of caerulomycin on microorganisms. It may be pointed out that metal chelation plays an important role in the toxic syndrome caused by lycomarasmin in plants[5]. Further work on the mechanism of these wilting toxins is in progress.

Table 1. Minimum concentration required to cause complete wilting in 48 hours.

Compound	Concentration μg/ml in water
1. Caerulomycin	1.3～ 1.5
2. Caerulomyconitrile	10.0～12.0
3. Caerulomycamide	1.0～ 1.2
4. Caerulomycic acid	0.5～ 0.7
5. 2,2′-Dipyridyl	10.0～12.0
6. Fusaric acid	6.0～ 8.0

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