

shown in table 2. A concentration of 20 ppm was sufficient to prevent any root infection, and even 10 ppm reduced infection approximately 6-fold.

The mammalian toxicity of these materials is apparently low. None of three rabbits died or became visibly ill after single oral doses of 300 mg/kg of compound I.

This study showed, somewhat anticlimactically, that compound I (the first compound in this group to be tested) is the most active of the series. It is probably also the only one with sufficient activity to be potentially useful in the field.

The use of these compounds as nematicides has been patented¹³.

- 1 This paper reports the results of research only. Mention of a pesticide in this paper does not constitute a recommendation for use by the USDA nor does it imply registration under FIFRA, as amended. Mention of a trademark or proprietary product does not constitute a guarantee or warranty of the product by the US Department of Agriculture, and does not imply approval to the exclusion of other products that may also be suitable.
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Induction of trisomics by platinum diaminodinitrodichloride

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Summary. Trisomics were produced in the pollen mother cells of *Pennisetum americanum* (L) K. Schum plants resulting from seeds treated with 10^{-6} M platinum diaminodinitrodichloride. On the basis of this preliminary study the relative potency of cis-PDD may be roughly equal to the well known plant clastogen, maleic hydrazide.

An interest in the study of trisomy in higher organisms is based on 2 facts. First, a number of congenital birth defects such as Down's Syndrome, Klinefelter's Syndrome and Turner's Syndrome are associated with the presence of an additional chromosome in the human genome. Second, primary trisomics have been useful in the past for establishing genetic linkage groups².

Trisomics occur spontaneously and also have been induced in crop plants through breeding techniques. Reports showing the induction of trisomics in higher plants through chemical treatment are rare.

An evaluation of the biological effects of platinum compounds has become of considerable interest as a result of

their use in catalytic converters in the automotive industry. One of the platinum compounds, cis-platinum diaminodichloride (cis-PDD) shows potential in cancer chemotherapy³. However, cis-PDD has been reported to induce base-pair mutations in bacteria⁴. It has also been implicated as a mutagen on the basis of results in mammalian cells in culture^{3,5-7}, and in insects⁸. The results reported here show that another platinum compound, platinum diaminodinitrodichloride $[\text{Pt}(\text{NH}_3)_2(\text{NO}_2)_2\text{Cl}_2]$ induced trisomics in pearl millet, *Pennisetum americanum* (L) K. Schum.

The seeds of pearl millet inbred line Tift 23DB ($2n=14$) were presoaked in distilled water for 24 h. Seeds were treated by soaking for 3 h with the freshly prepared solution of the test compound at the concentrations of

Germination percentage and seedling survival after PDDD and MH treatments

Test compound	Concentration	Germination (% control)	Survival 2 weeks after germination (% control)	Number of trisomic plants obtained
Control		100	100	0
MH	10^{-4} M	98	11	0
	10^{-5} M	105	86	2
PDDD	5×10^{-5} M	109	92	0
	5×10^{-6} M	103	80	0
	10^{-6} M	113	87	4
	10^{-7} M	97	88	0

$5 \cdot 10^{-5}$ M, $5 \cdot 10^{-6}$ M, 10^{-6} M and 10^{-7} M. Seeds soaked in distilled water provided a negative control and treatment with maleic hydrazide (MH) at 10^{-4} and 10^{-5} M concentrations provided the positive control. Maleic hydrazide has been established as clastogenic in different plant and animal species³. 150 seeds were used in each treatment. Pollen mother cells from test plants were stained with acetocarmine for the chromosomal studies. Seeds treated with a 10^{-6} M concentration of the platinum compound yielded 4 plants with trisomics and those treated

with 10^{-5} M MH yielded 2 trisomic plants (table). The other concentrations and the control plants did not yield any trisomics.

All the trisomic plants had certain common characteristics, i.e. small height, late tillering, large number of tillers, and partial sterility. These plants could not be distinguished from each other as to a particular trisomic on the basis of criteria suggested by Gill et al.². Trisomic cells can be distinguished by the presence of an extra chromosome (fig. 2) from the normal cells (fig. 1).

Figure 1. Normal chromosomal complement (7II).

Figure 2. A trisomic cell (6II + 1III, arrow).

- 1 We gratefully acknowledge the National Science Foundation grant No. DEB76-04150 to H. Hellmers for the Duke University Phytotron where a part of this study was conducted.
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Influence of breeding temperature on an antibody response (anti SRBC) in a teleostean fish, *Dicentrarchus labrax*

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Summary. The effect of temperature on T helper lymphocytes was studied in the spleen of a fish (*Dicentrarchus labrax*). The cooperation phenomenon was demonstrated, with a maximal activity when animals were maintained at 18 °C.

The cellular immune system of fish has been analyzed in fundamental and applied studies. The aim of this work has been directed towards applying newly acquired basic knowledge to understanding the mechanism involved in protecting fish against microbial infection. This paper reports our initial findings on the cellular cooperation of lymphocytes with T-lymphocytes B in a teleostean fish 'le loup de mer' (*Dicentrarchus labrax*) bred at different temperature. No other reports concerning this fish have been found.

Materials and methods. Animals. The fishes, 1-year-old, were obtained from the DEVA-Sud fisheries (CNEXO-Palavas les Flots, France) and bred in our maritime laboratory (Laboratoire maritime de Physiologie, Tamaris sur Mer, France). Animals were kept in aquaria with aerated water at 13, 18 and 21 °C. They were acclimatized for 4 weeks at each temperature before antigen injection (30 animals for each temperature). Experiments were carried out in January and February. Antigen and immunization. Sheep red blood cells (SRBC)