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GIORNATA DI STUDIO DEDICATA ALLA CHIMICA ORGANICA DELLE MOLECOLE BIOLOGICAMENTE ATTIVE

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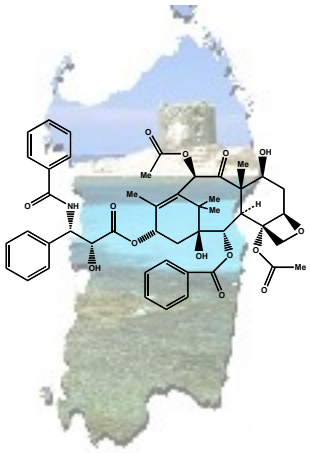

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ANTIFUNGAL METABOLITES PRODUCED BY *TRICHODERMA VIRIDE* AGAINST *SCLEROTIUM ROLFSII*

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As a part of a long-running project searching for fungi suitable for biological control of soil-borne plant pathogens, we found a strain of *Trichoderma viride* that showed *in vitro* and *in vivo* antagonistic activity towards *Sclerotium rolfsii*, the causal agent of crown and stem rot in artichokes. The noteworthy antagonistic activity exhibited by *Trichoderma* spp. strains may in part be explained by the production of different classes of bioactive metabolites, including antibiotics such as peptaibols, inhibitors of fungal growth and enzymes.

In this comunication we report our progress regarding the isolation and characterization of new antifungal metabolites from this strain of *T. viride*.

Four pure compounds have been isolated up to now from the ethyl acetate extracts of the culture filtrates of *T. viride*.

One of these, obtained as colorless liquid with a strong coconut-like odor, was a well-known fungal metabolite and was identified by means of its spectroscopic properties as 6-*n*-pentyl-2*H*-pyran-2-one.

The second compound had previously been isolated and characterized as isoharziandione, a new tetracyclic diterpene capable of inhibiting fungal growth of *S. rolfsii* .

The third compound was isolated as a homogenous oil resistant to crystallization and was characterized as a new 6-substituted 2*H*-pyran-2-one, trivially named viridepyronone. The compound had a good antifungal activity against *S. rolfsii,* and its minimum inhibitory concentration (over 90 % inhibition) was found to be at 196 μg/mL. This was the first time that this metabolite had been reported as being produced by a fungal species.

Recently from the same culture filtrate of this fungus, we isolated a new pentasubstituted oxiranyldecene, named viridenepoxydiol, showing inhibitor effect on mycelial growth of *S. rolfsii*. Its minimum inhibitory concentration (over 90 % inhibition) was found to be 396 μg/mL.

The results of these studies provide new information on the production *in vitro* of antifungal metabolites by *T. viride* commonly employed as a possible agent for biocontrol in agriculture. Future investigation should be addressed to clarify the role of these metabolites in the biocontrol process and the nature of interaction between them or with enzymes.