

A rice fungicide blastacidin S efficiently binds Cu(II) ions and prevents DNA from metal-induced damage.

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Blasticidin S is a representative of the aminoacylnucleoside class of antibiotics and it possesses fungicidal properties against the virulent fungus which causes a serious rice blast disease in Asia. It is widely used to control rice blast by foliar application as a crop protection agent. Serious copper contamination is observed in some areas of China. Moreover, some paddy soils present a potential risk of copper accumulation in the human body through the food chain, leading to several disorders. This work presents the results of combined potentiometric and spectroscopic (UV-visible, EPR, CD, NMR) data which lead to the conclusion that the antibiotic is capable of binding copper, and the resulting complexes are likely to form in the soil. The process of complex formation has a potential influence on the population feeding on a rice-based diet. Moreover, the results of electrophoretic experiments revealed that complexes do not cleave DNA. On the contrary, the presence of blasticidin S may prevent DNA from a Cu(II)-induced damage.

Słowa kluczowe

Blasticidin S, Fungicide, Copper(II) coordination, Antioxidant, DNA copper-induced degradation

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