Chemical ecology at work: plant defense alkaloids as source of inspiration for crop protection

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Plants produce alkaloids as defence against insects, a result of a dynamic and complex co-evolution over millions of years. These bioactive natural products may repel or intoxicate insects and as such constitute a source of inspiration for the design of synthetic active ingredients in insect control.

Herein, we present the discovery of pyridinylcyanotropanes,[1] inspired by the plant defence alkaloid Stemofoline. Furthermore, we describe how the physical chemical properties of pyridinylcyanotropanes and structurally-related analogues dictate their localization in plant tissue and ultimately their performance in crop protection.[2]