

LITERATURE REVIEWS

By Doug Darnowski

Ziaratna, S.M, Kunert, K.J., and Lall, N. 2009. Elicitation of 7-methyljuglone in *Drosera capensis*. South African Journal of Botany 75: 97-103.

Many members of ICPS will be aware that carnivorous plants have been the source of various medicines over time. *Drosera* is no exception, with several homeopathic remedies based on it. While the efficacy of these is highly doubtful, *Drosera* has been shown to be a source of various anti-microbial compounds which fall under the general heading of quinines. The authors of this paper report on the production of 7-methyljuglone in tissue-cultured plants, with the best conditions involving mixed nitrogen supplementation and the application of salicylic acid, which is associated with plants' responses to attack by pathogens. (DWD)

Peroutka, M., Adlassnig, W., Volgger, M., Lendl, T., Url, W.T., and Lichtscheidel, I.K. 2008. *Utricularia*: a vegetarian carnivorous plant? Plant Ecology 199: 153-162.

Anyone who has looked at more than one or two *Utricularia* bladders under the microscope knows that the traps of aquatic species are often full of various green algae. It has been suggested that this may be the plants using their translucent traps as tiny aquaria to enhance their nutrient uptake. In this paper, the authors, well-known for their wide-ranging work on carnivorous plants, show that most of the algal cells in the traps of several species of bladderworts from Europe are indeed digested, and they leave the question open as to whether this provides the plant with a benefit, making these vegetarian carnivorous plants, or a further stress, carnivorous plants usually growing in stressful habitats. (DWD)

Thornhill, A.H., Harper, I.S., and Hallam, N.D. 2008. The development of the digestive glands and enzymes in the pitchers of three *Nepenthes* species: *N. alata*, *N. tobaica*, and *N. ventricosa* (Nepenthaceae). International Journal of the Plant Sciences 169: 615-624.

An enduring controversy in the biology of *Nepenthes* is whether the unopened pitchers make fully functional digestive enzymes, only pro-enzymes (enzymes needing slight modification before they can act), or none at all. Generally, opinions these days lie in either of the first two groups. In this paper the authors make a nice combination of biochemistry and microscopy as they study the fine structural development of the digestive glands in the three species of *Nepenthes*, demonstrating the production even in unopened (i.e., immature) pitchers of fully functional digestive enzymes. (DWD)