



PROBLEM 18

[SUPPL Problem 18 # 1]

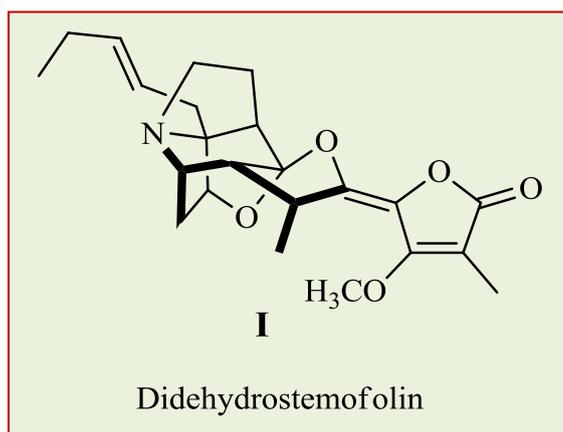
Arabic compound numbers in TAPSOC,
Roman numerals in Supplementary material

In Perspective

Building complexity in polycyclic alkaloids

Reaction **A** in your TAPSOC was developed as a model to build the “caged” portion of a natural series of alkaloids [1-3], the stemofolines (e.g. **I**, below) isolated from the Southeast Asian plant family Stemonacea not long ago [3,4].

Extracts of these plants have a wide spectrum of biological activities. Among others, they are natural insecticides operating as blockers of the acetylcholine receptor (virtual paralyzers). Besides, they are useful drugs for anti-cough treatment in people, kill human carcinoma cell lines *in vitro* and act as oxytocin antagonists as well.



Oxytocin is one of those wonder molecules of Nature. In addition to the well known activities in the mother before, during, and after child birth and contribute to stimulate the production of breast milk, it is also a neurotransmitter. It modulates a

number of functions associated with the improvement of social bonding, sexual arousal and orgasm, mothers love for their offspring no matter how unbearable they may be, increase trust and reduce fear, and other positive aspects of peoples personality. By blocking oxytocin physicians control certain pathologies during labor and sexual misconduct, whereas researchers study closely oxytocin physiology and behavioral responses; a wonder compound, no doubt.

REFERENCES

- [1] Dietz J, Martin SF *Tetrahedron Lett.* 2011;52:2048-2050.
- [2] Shanahan CS, Fuller NO, Ludolph B, Martin SF *Tetrahedron Lett.* 2011;52:4076-4079
- [3] Pilli RA, Ferreira de Oliveira MC. *Nat. Prod. Rep.* 2000;17:117-127.
- [4] Greger H. *Planta Med.* 2006;72:99-113.