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Natural Products

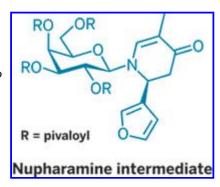
Chemical Beaver Tale

Researchers build an enantiomerically pure component of the beaver's scent gland

Sarah Everts

The Canadian beaver's scent glands were once a source of pricy perfumes, and extracts from the glands continue to be used in homeopathic medicine for treating hysteria. But on a different note, researchers in Germany have synthesized a component of the odoriferous cocktail through a methodology that uses sugar groups to confer chirality in organic molecules (*Angew. Chem. Int. Ed.*, 10.1002/anie.200805606).

Horst Kunz and colleagues at the University of Mainz report the first enantioselective synthesis of an all-cis nupharamine found in the beaver's scent gland. In one of the 10 synthesis steps, a bulky pivaloyl-decorated sugar is attached to an intermediate enolate (shown) that eventually leads to an indole moiety. The presence of the bulky carbohydrate directs cis protonation of the enolate; without the sugar, trans protonation occurs.



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SHUTTERSTOCK/ROB BYRON
BEAVER-INSPIRED German
researchers use a component of the
beaver's scent gland to develop
enantioselective synthetic methods.

Although the team hoped a tantalizing aroma would emerge from their products, the trans epimer smelled like stale fish and the cis epimer was odorless, Kunz says. About 40 compounds are in the gland extract, he adds, but the distinctive scent hasn't been reconstructed using the synthetic components. The long-soughtafter odor is "still a secret of the beaver," Kunz notes.

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