

Hygrophorones and Aetokthonotoxin (AETX)

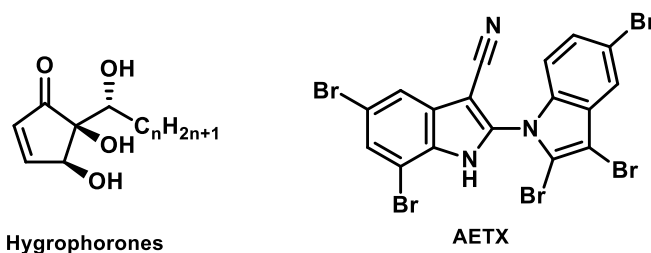
-natural products with pronounced biological activities-

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Today's lecture will comprise the total synthesis of interesting natural products, derivatives thereof and discussion of the biological activities.



Hygrophorone B₁₂ ($n=12$), an antifungal constituent from the fruiting bodies of *Hygrophorus abieticola*, has been isolated and subsequently synthesized in enantiomerically pure form. The total synthesis encompasses a Sharpless asymmetric dihydroxylation protocol as the stereodifferentiating step followed by two diastereoselective aldol-type reactions. The approach allows for the unambiguous control of all three stereogenic centers and, furthermore, the unequivocal determination of the relative and absolute configuration of the antibiotic hygrophorones B for the first time.

Pentabrominated biindole **Aetokthonotoxin (AETX)** has recently been identified as the cyanobacterial neurotoxin causing Vacuolar Myelinopathy, a fatal neurologic disease, spreading through a trophic cascade and affecting birds of prey such as the bald eagle in the USA. The complex, highly brominated 1,2'-biindole could be synthesized via a Somei-type Michael reaction as key step. The optimized sequence yielded the natural product in five steps with an overall yield of 29%.