Total Synthesis of Tagetitoxin

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- Tagetitoxin was first discovered in 1937 in the horticulture community as an enigmatic plant pathogen. Its unprecedented inhibitory effects on RNA polymerase was revealed in 1990.

- The detailed structure was not elucidated until 2016 by Aliev and coworkers, though the absolute configuration nor the optical rotation has been disclosed.

- The fully oxidized cyclopentane core, multiple polar functional groups and containing more heteroatoms than carbon atoms make its synthesis more challenging.

Presented by Yuanzhe Zhang, Liu group.
Retro-synthetic Analysis

(-)-tagetitoxin

\[ \text{oxidation} \]

\[ \text{hydrolysis} \]

\[ \text{thio[3,3]} \]

\[ \text{oxidation} \]
1) TMSOK, MeCN/H$_2$O = 1:1, RT 14 h
2) MeONH$_2$·HCl, H$_2$O

purified by DEAE anion exchange column
72%, three steps

(-)-tagetitoxin