Sultan Sönmez

Synthetic Approaches to the Palmarumycin Skeleton

In the Eighties the research to finding new Antibiotics was limited. Because they think the availably antibiotics was enough and it was near the mark to solve the infectious disease Problem. However, some bacteria have become resistant to specific antibiotics. This means that the antibiotics don't work against them. In this respect the investigation for new compounds has beginning again. The Palmarumycine attracted attention because of their antifungal, antibacterial, and herbicidal activity.

There are numerous procedures for the conversion of 1,8-Naphthalindiol-Spiroacetale from two Naphthalene units. One from them is the Biomimetic type oxidative cyclization of binaphthyl ethers. The second approach was Ketal formation of substituted tetralones with 1,8-dihydroxynaphthalene. Because of the high varibility of the second strategie we are using the oxidative cyclization between 1-Benzyl-8-Hydroxynaphthalin and 1-Fluor-4-Nitrobenzen. Key step in this Synthesis is the Diarylether formation. We use for this a nucleophilic displacement reaction. The coupling to Diarylether proceeded in good yield and the nitro compound was hydrogenated in one step to the aminophenol. Active manganese dioxide was used in the cyclization step to afford the Benzochinonketal. This compound used for the Diells-Alder-Reaction to synthesis several Palmarumycine derivatives. Many dienes can potentially be used to yield aromatic and non-aromatic Ring system. We are use this method to prepare 5-Methoxy-4a,8a-Dihydro-spiro[Naphthalin 1,2-Naphtho[1,8-de][1,3]-dioxan]-4-on. The Palmarumycine analogues can be prepared from this compound. Such as Aromatisation, Epoxidation, Elimination and Douplebondisomerization. The α,β-unsaturadet keton group in the Palmarumycin 5-methoxy-4a,8a-dihydro-spiro[naphthalin 1,2-naphtho[1,8-de][1,3]-dioxan]-4-on was converted in a oxim and a grinardreaktion product. During our research in the dihydroxynaphthalene natural product area we are synthesed very importand intermediate products. This result could also open new ways for design of biologically active Palmarumycine analogues.

The synthesis of Palmarumycine was performed for a better unterstanding of the sructure-bioactivity relationship, and in order to develop new agents for more effective treatment of different plant or human diseases. These investigations could also open new opportunities for other applications, such as targeted drug design and delivery. In cooperation with the BASF AG

the antifungal activity of this Palmarumycine analogue will be tested.