

# NOVEL DI-, TRI-, AND TETRAAROMATIC BENZOHOPANES FROM THE LOWER JURASSIC BLANOWICE FORMATION, SOUTHERN POLAND

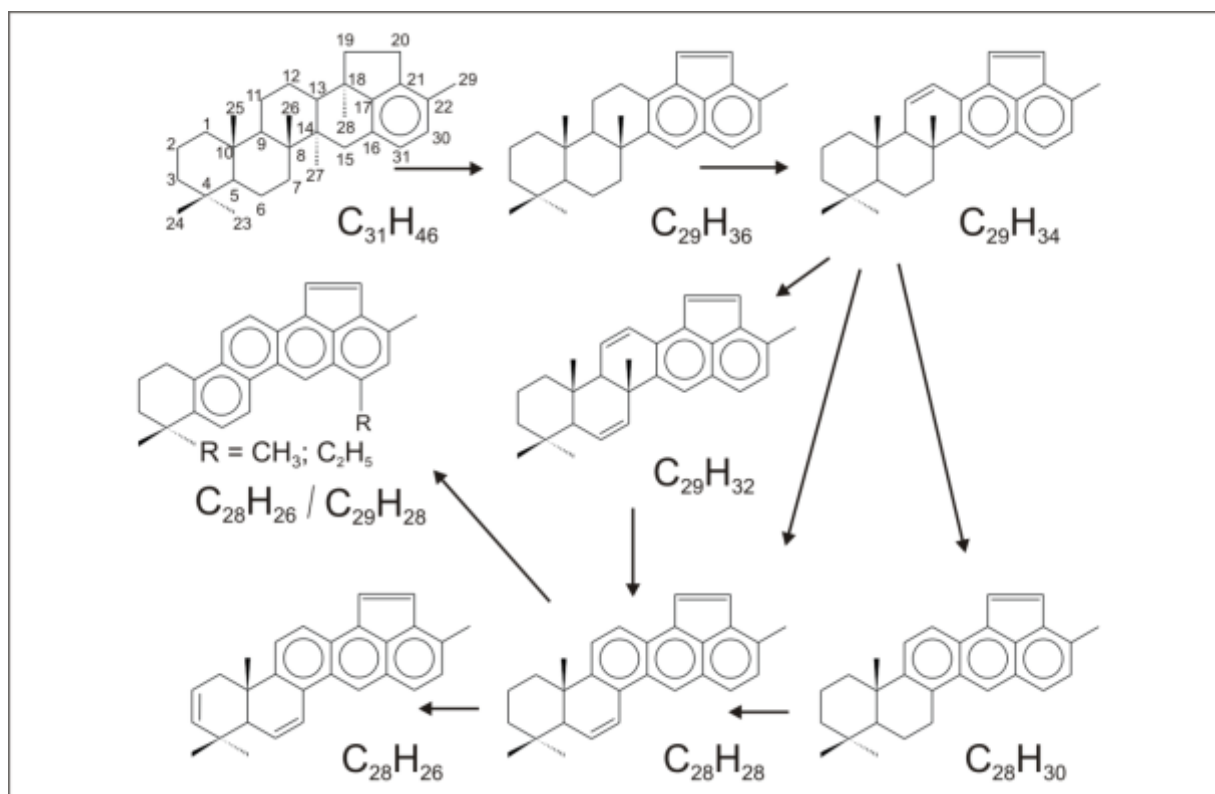
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Bacteriohopanepolyols are lipid membrane constituents of many bacterial groups (Rohmer et al., 1984). During diagenesis, these compounds (e.g. bacteriohopanetetrol) undergo chemical reactions, such as cyclization and aromatization, leading to an extensive series of structurally-modified hopanoids in sedimentary organic matter and crude oils (e.g., Cong et al., 2014). Bacteriohopanetetrol can be cyclized at the C-20 or C-16 positions leading to the development of benzohopanes. The benzohopanes formed by side chain cyclization at C-20 were described by Hussler et al. (1984), and are common in sediments and crude oils. A second series of benzohopanes cyclized at C-16 was identified by Schaeffer et al. (1995), and is widespread in immature sediments (e.g. Nytoft et al., 2016).

Here, fourteen novel di-, tri-, and tetraaromatic derivatives of the benzohopane series cyclized at C-16 or C-20 have been identified in the coal and surrounding sandstone from Lower Jurassic Blanowice Formation from southern Poland (Rybicki et al., 2016) using gas chromatography-mass spectrometry. Their possible structures and formation pathway have been proposed based on mass spectra and retention times (Fig.1).



**Figure 1** Possible formation pathway of the poly-aromatic derivatives of benzohopane cyclized at C-16.

Bulk geochemical data and the presence of unsaturated benzohopane derivatives indicate low maturation of the Blanowice coals, characteristic for lignites. The diverse distributions of the benzohopane derivatives in the coals and surrounding sandstones showed differences in the extent of biodegradation. Our observations suggest that the di-, tri-, and tetraaromatic derivatives of benzohopanes cyclized at C-16 may be more resistant to biodegradation than regular benzohopanes.

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