

CORALS OF THE UPPER VISÉAN MICROBIAL-SPONGE-BRYOZOAN-CORAL BIOHERM OF KONGUL YAYLA (TAURIDES, S TURKEY), PALAEOBIOGEOGRAPHIC RELATIONS

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INTRODUCTION

The Mississippian (lower Carboniferous) bioconstructions are well diversified and widely distributed (Aretz & Herbig, 2003), particularly in the upper Viséan strata. Such a reef was described from the Kongul Yayla outcrop located between Hadım and Taşkent (Central Taurides, South Turkey). The reef is included in the Zindancık Member of the Kongul Formation that belongs to the Bolkar Dağı tectonostratigraphic unit (Altınır & Özgül 2001). Previous studies in this area (Özgül 1997, Turan 2000) already recognized the reefal character of the Kongul Yayla outcrop, but never described it. Özgül (1997) and Altınır & Özgül (2001) attributed from Viséan to Serpukhovian age for the whole Kongul Formation. But, Ekmekçi & Kozur (1999) indicated a Moscovian age for the entire formation based on only four conodonts from one single locality. At first sight, the dating of the Kongul Formation is not precise. The coral association found in Kongul Yayla indicates an late Viséan age for the reef (see results below).

MATERIAL AND METHODS

Materials were collected during a field study in the Hadım area in summer 2009. The identification of the bioconstructed microfacies was possible but not with many details because of the poor preservation of the material. The facies analysis and the comparison with well-known reefs of Western Europe and North Africa was done by Denayer & Aretz (2012). The description of corals is based on more than 50 specimens and colonies studied on 160 thin sections (transverse and longitudinal). The palaeobiogeographic analysis are based on the comparison of the rugose coral association from Kongul Yayla with the other parts of Turkey (Istanbul zone, Aladağ unit, unpublished data of the author) and well known coral fauna from Western Europe, North Africa and Asia. Cluster analysis were processed to figure the palaeobiogeographic relations of these faunas.

RESULTS

The bioherm exposed in Kongul Yayla, is approximately 50 m thick. Its base is made of 15 m of thin-bedded coarse crinoidal and bioclastic limestone and includes a 0.4 cm-thick bed constructed by large colonies of *Siphonodendron pauciradiale*. The bioherm *sensu stricto* begins above this bed with a 20 to 25 m-thick massive pale limestone rich in macrofossils. The diversified fauna includes stemmed echinoderms spiriferid and productid brachiopods, gastropods, foraminifers, lithistid and calcareous sponges, reticulate fenestrate fenestellids, ramose rhabdomesid, massive stenoporids (*Tabulipora* sp.) and encrusting fistuliporids bryozoans (*Fistulipora* sp.), tabulate corals (micheliniids, syringoporids, cladochonids, auloporids) and rugose corals. Most of the corals were collected in this facies. The reef-crest facies is made of a 1-2 m-thick framestone made up by large (60 cm in diameter) colonies of *Lithostrotion maccoyanum* and chaetetid sponges. The bioherm is topped and flanked by a 5 m-thick coarse bioclastic limestone unit, overlain by a 25-30 m-thick package of dark shale, locally bioclastic (crinoids, corals and brachiopods) and progressively silty and sandy up-section. A complete description of the stratigraphy and facies is available in Denayer & Aretz (2012).

9 genera and 15 species (including one new) of rugose corals are described. The most common taxa are *Siphonodendron irregulare*, *S. pauciradiale*, *S. cf. intermedium*, *Lithostrotion araneum*, *L. decipiens*, *L. maccoyanum*, *Axophyllum* aff. *pseudokirsopianum*, *Palaeosmilia multiseptata*, *P. murchisoni*, *Clisiophyllum* aff. *keyserlingi*, *Amygdalophyllum* sp., *Rotiphyllum* cf. *densum*, *Amplexocarinia* aff. *cravenensis*, *Soshkineophyllum?* sp. and *Espielia tauridensis*. The latter being a new species (Denayer, accepted). The tabulate corals are mostly micheliniids, syringoporids, cladochonids and auloporids. Heterocorals and chaetetids are also present.

DISCUSSION AND CONCLUSIONS

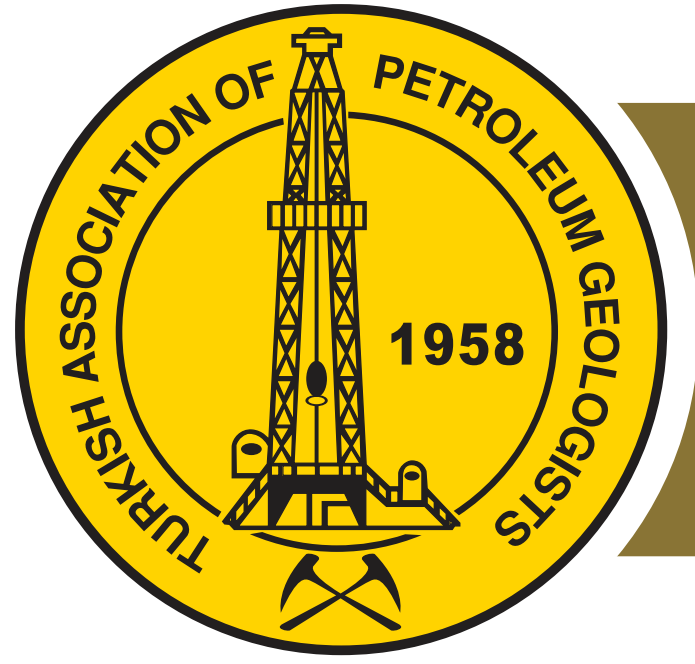
The rugose coral association is typical of the late Viséan. Moreover, *Siphonodendron pauciradiale* and *Lithostrotion maccoyanum* are the guide taxa for the RC7 β biozone of Poty et al. (2006) and indicate a late Asbian (late Viséan) age for the bioherm.

The absence of corals of the genus *Kueichouphyllum* excludes the Bolkar Dağı unit from the "Kueichouphyllum zone" of Minato & Kato (1977) extending from eastern Asia up to Iran and recognized in the neighbouring Aladağ tectonostratigraphic unit of Taurides (unpublished data of the author). The occurrence of *Lithostrotion*, *Siphonodendron*, *Axophyllum* and *Palaeosmilia* indicates relationships with the Eurasian fauna. The corals genera present in Kongul Yayla are known from similar environments in the Ossa Morena (S. Spain, Rodríguez & Falces 1992, Rodríguez et al. 2002) and Bétic Cordillera (S. Spain, Herbig 1986); in Montagne Noire (S. France, Aretz 2002); in Azrou-Khenifra Basin of the Moroccan Meseta (Aretz & Herbig 2010), Jerada Massif (Morocco, Aretz 2010) and Adarouch Area (Morocco, Said et al. 2011); in the Béchar Basin (Algeria, Semenoff-Tian-Chansky 1974) and Algerian Sahara (Aretz 2011). Like all these regions, the Bolkar Dağı unit belongs to the southern branch of the Western Europe Coral Province of Sando (1990). The absence of several typical taxa (e.g. *Kizilia*, *Dibunophyllum*) indicates that the Kongul Yayla is most similar to the southern part of this palaeogeographic zone (North Africa). Moreover, the richness in axophyllids is typical feature of the Béchar Basin after Semenoff-Tian-Chansky (1974).

In conclusion, the coral fauna argues for a Western European affinity of the Bolkar Dağı unit and (probably) of the Anatolian terrane.

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