

**Cretaceous potential source rocks of the Outer Dinarides  
(Mokra Gora, Tara Mountain, SW Serbia)**

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Organic-rich sediments of a Cretaceous (Albian to Turonian) succession in SW Serbia (Mokra Gora, Tara Mountain) were investigated regarding their source rock potential. For this purpose six sections in different positions of the basin were sampled. The Cretaceous geodynamic history and the depositional settings of organic-rich sediments in the Alpine-Dinaric realm is still not completely understood and controversially discussed. After an orogenetic process with decreasing tectonic activity during the Late Jurassic to Early Cretaceous a new depositional cycle started around the Early/Late Cretaceous boundary. In the Outer Dinarides of SW Serbia a Cretaceous sedimentary succession on top of the former nappe stack is preserved. The investigated succession is characterized by a basal transgressive part (Albian) followed by a series of alternating layers of siliceous to marly limestones and thin bedded black marls rich in organics (Cenomanian). This series represents a deepening upward. The black marls contain pithonellas, rarely heterohelicides, hedbergellas, ammonites, echinoderms and molluscs. On top of the investigated succession light limestones with rudists, shell fragments and gastropods represent a shallow water development of Upper Cenomanian to Turonian age.

The stratigraphic age of the organic-rich interval is proven as Cenomanian by means of *Aeolisacus inconstans*, *Ovalveolina maccagnae*, *Rhapidionina laurinensis* and *Cisalveolina fraasi*.

There is only little information on the general characteristics of the organic material of the black marls in the investigated area. Some existing data from Mokra Gora show 0.90 to 8 % TOC and values for residual petroleum potential ( $S_2$ ) between 6.37 and 49.83 mg HC/g rock.  $T_{max}$ -values between 419 and 426 °C indicate low maturity. Based on hydrogen and oxygen indices (HI and OI) the kerogen can be classified as type I and II. For the Tara Mountain our data represent the first results of source rock investigations. A total of four sections were sampled around Tara artificial lake. Samples of three sections show values of less than 2.5 % TOC; HI-values are below 400 mg HC/g TOC. The kerogen of these samples can be classified as type II. In one section the samples reach maximum values of greater than 20 % TOC. The results for the HI exceed 600 mg HC/g TOC; the kerogen of these samples plot in the field of type I. All investigated samples are immature showing  $T_{max}$ -values between 397 and 428 °C. The TOC-contents of the sediments are increasing towards stratigraphically higher parts of the succession indicating deepening and starvation of the basin. Detailed microfacies analysis and organic geochemical investigations are in process. Due to these results the black sediments of the investigated Cretaceous succession around Mokra Gora and

Tara Mountain can be seen as excellent potential source rocks featuring high potential to generate hydrocarbons in the nappe stack of the Dinarides.