LOWER CRETACEOUS SUBMARINE RIFT VOLCANISM IN THE SOUTHERN TRANSDANUBIA IN HUNGARY

by
I. BILIK
Petrological and Geochemical Department
Faculty of Nature Sciences,
Eötvös University
1088. Budapest, Muzeum-ktr 4/A. Hungary

ABSTRACT

In the southern part of Transdanubia during the Triassic and Jurassic times, more than 6,000 metres terrigenous, shelf and pelagic sedimentary sequences formed in a basin which was sinking with different speed.

The oldest volcanic rocks in this territory are intercalations of basic and intermediate tuffs, found in the Lower-Liassic formation, which is characterised by very rapid sinking of the basin. These volcanoclastics are encountered as patches with thicknesses approximating some few metres. The chronology of these rocks is discussed.

The sediments following the Lower-Liassic formation are characterised by continuity till the Lower-Cretaceous, and they are free from volcanic materials.

The main volcanic activity in the area began during the Berriasian age under open pelagic conditions, and continued to the Upper-Valanginian. In the pause of the volcanic activity, during the Upper-Valanginian and Hauterivian shelf and shallow-water clastic sediments were deposited.

After that the volcanic activity commenced again but during this period, the volcanic activity covered a lesser space and time. During this volcanic activity dykes and subvolcanic masses were intruded in the Permian-Triassic and Jurassic sedimentary sequences of the miogeosinclinal basin. The volcanic suite was formed in the fault system of NEE-SWW direction. The Lower-Cretaceous volcanic rocks are highly differentiated, from the basic diabase and dolerite to the albitic diabase and keratophyre and phonolite, the origin of which is explained by magmatic differentiation and contamination with sedimentary rocks. Among the subvolcanic and volcanic rocks spilitic rocks are common. The submarine lava-flows show in situ brecciation, as follows: different kinds of pillow-lavas, lavabreccias and hyaloclastics.

About the origin of the Lower-Cretaceous volcanic suite and its tectonical environment — to our knowledge — we have not a uniform point of view. If the territory is supposed as a tectonical micro-unit, the volcanism seems to be as a result of a continental-rifting. And if we take into consideration the ultrabasic and basic volcanic rock-suite, which can be found North from the northern border of the area, and which can be considered an ophiolite-like-suite, we might regard the Lower-Cretaceous volcanism as an analogy of the island-arc calcalkaline volcanism. The paper tries to give an answer to the two possibilities of the origin of this volcanism on the basis of several petrochemical discriminative diagrams.