

## Geochemical and petrological characteristics of the Carnian Basic volcanic rocks from the Alakircay Nappe of the Antalya Nappes, SW Turkey

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The geochemical and petrological characteristics of basic volcanic rocks situated near to Antalya city, SW Turkey have been studied from two different sections (Cukurkoy and Yaylakuzdere) in the Alakircay nappe of the Antalya nappes. The Cukurkoy section includes basic volcanic rocks intercalated with pelagic sediments with middle Carnian radiolarians. The Yaylakuzdere section also contains basic volcanic rocks overlain by pelagic sediments with radiolarian faunas indicating late Carnian and latest Carnian/earliest Norian age.

All of the samples were obtained from these sections are hypocristalline porphyritic and intersertal in texture. They mainly contain plagioclase, pyroxene and rarely olivine phenocrysts set in a matrix of the microcrysts of the same minerals. Volcanic rocks include within-plate type alkaline basalts with high TiO<sub>2</sub> contents. They display typical oceanic island basalts (OIB) affinity from multi-element spider diagrams. OIB-like deep mantle source is also confirmed by the presence of low La/Yb, Zr/Y and La/Nb<1 ratios. These alkaline basalts display no depletion of Nb and Ta and have high HFSE abundance. All these characteristics reveal that they have not been significantly affected by interactions with subducted slab and/or continental crust.

All these data indicate that during the advanced stages of the rifting in the Antalya nappes, alkaline volcanism originated from a small OIB-type mantle plume in Carnian time interval.

## Standard sampling and assaying methods to support mineral exploration in an extremely arid environment: The Chilean experience

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Three types of surface samples have been collected to obtain a wide geochemical vision in mineral exploration in very dry environments in northern Chile (Table 1). Sample types A and B are useful to delineate drilling targets (Table 2). Sample type B is used to detect buried mineralization. Sample type C can be used in large to medium scale surveys. All sample types provide relevant information about lithology, weathering, alteration and mineralization.

Type	Sample	Geomorphology	Sampling Zone
A	Residual soil	Positive gentle relief	Top of hill and slopes
B	Covers	Flat alluvial covers	Stable old terraces
C	Sediments	Drainage junctions	2 <sup>nd</sup> -order drainage

**Table 1:** Type of samples.

Type	Objectives	Design
A	Target for drilling	50x50 m, 100x100 m regular grids
B	Buried deposit	25-m station lines cutting main geological features
C	Large to medium scale surveys	Gentle hills, widely distributed in junctions

**Table 2:** Objectives and design of sampling.

For sample types A and B, conventional methods of assaying, involving acid digestions and ICP techniques for determine a large array of elements, are adequate. Sample type C requires treatment with special assaying methods such as MMI®, Enzyme Leach® and other selective processes using weak solutions such as hydroxylamine hydrochloride or de-ionized water. Some of these assaying techniques were adopted for detection of very low metal concentrations in order to identify possible buried sources of metals. In addition to assay data, the exploration database must include the following field and sample descriptions: features of environment, sampling depth, granulometry, color, existence of salts and reactivity to diluted hydrochloric acid.

The adopted standard sampling and assaying methods afford for a reliable assay database that would provide satisfactory information to support geochemical interpretation in mineral exploration.