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SOME CONSIDERATIONS ON PALAEOZOIC SPILITES OF CARNIA
(ITALIAN EASTERN ALPS)

*ALCUNE CONSIDERAZIONI SULLE SPILITI PALEOZOICHE DELLA CARNIA
(ALPI ORIENTALI ITALIANE)*

Abstract — Petrographic, petrochemical, geochemical and mineralogical features of a spilitic association near Paluzza town (Carnian Alps, Northeastern Italy) are presented. The data, although not conclusive, point to a transitional versus tholeiitic parent source for the volcanics, linked to rifting processes of a continental crust.

Key words: Spilites, Basalts, Clinopyroxenes, Carnia, Eastern Alps.

Riassunto breve — *Vengono presentate considerazioni petrografiche, petrochimiche, geochimiche e mineralogiche sulle associazioni spilitiche affioranti presso Paluzza (Alpi Carniche). I dati, peraltro non definitivi, orientano verso un magma genitore transizionale tendenzialmente tholeiitico associabile a processi di rifting di crosta continentale.*

Parole chiave: Spiliti, Basalti, Clinopirosseni, Carnia, Alpi orientali.

Introduction and geological outlines

In the Carnian mountains (South-eastern Alps) massive spilites, pillow lavas, pillow breccias, hyaloclastites as well as keratophyres and keratophyric tuffs are widespread in the «hercynian Flysch» (GENTILI & PELLIZER, 1964; SPALLETTA et al., 1979). The volcanics are Upper Carboniferous (Namurian-Westfalian) aged and belong to Hochwipfel and Dimon formations (SELLI, 1963). They were genetically attributed to an alkali-olivine basaltic parent magma for «so-called» similarity with Karawanken high TiO₂ spilitics, and were interpreted as connected to transcurrent movements (SPALLETTA et al., 1982).

A «testing zone» was examined near Paluzza town (fig. 1) with the aim to verify

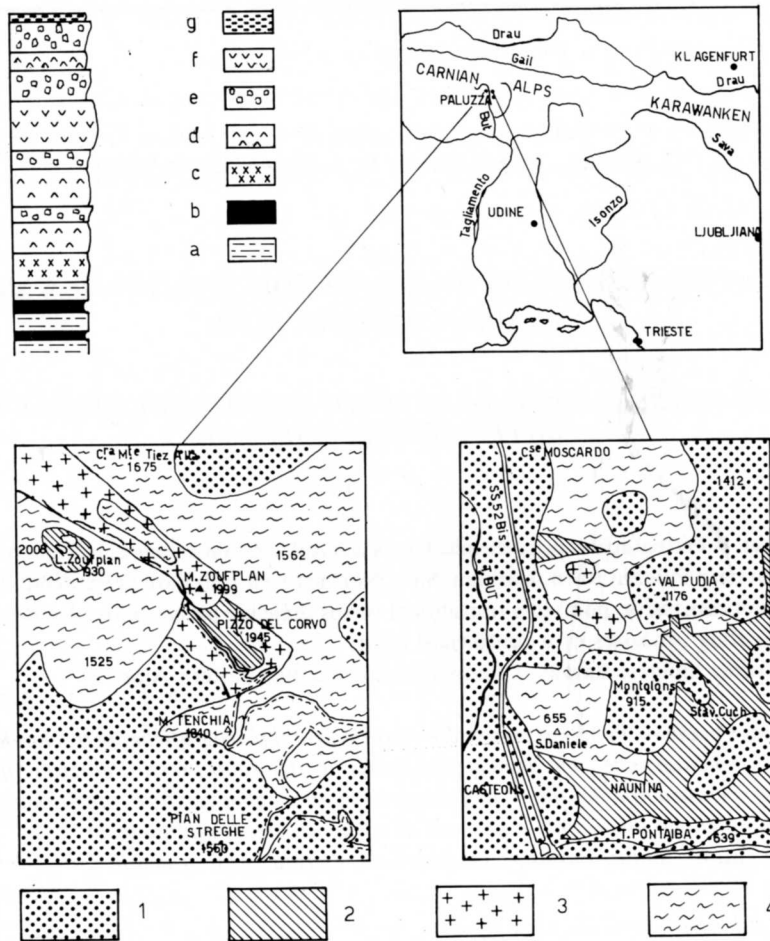


Fig. 1 - Geological sketch map showing the location of sampled areas: 1) Quaternary sediments; 2) Val Gardena Formation (Permian); 3) spilitic volcanics (Upper Carboniferous); 4) Dimon and Hochwipfel Formations (Upper Carboniferous). Stratigraphic section, after SPALLETTA et al., modified (1979): a) sandstones and siltstones; b) claystones; c) massive diabases; d) weakly porphyritic spilites; e) hyaloclastites and tuffs; f) hyaloophytic spilites and «pillow-lavas»; g) Val Gardena Formation. - *Carta geologica schematica che evidenzia le aree di provenienza dei campioni: 1) sedimenti quaternari; 2) Arenarie di Val Gardena (Permiano); 3) vulcaniti (Carbonifero superiore); 4) flysch ercinico (formazioni del Dimon e dell'Hochwipfel: Carbonifero superiore). Colonna stratigrafica, secondo SPALLETTA et al., modificata (1979): a) arenarie e siltiti; b) argilliti; c) diabasi massicci; d) spiliti debolmente porfiriche; e) ialoclastiti e tufiti; f) spiliti ialoofitiche e lave a cuscino; g) Arenarie di Val Gardena.*

some petrogenetic features of the outcropping volcanics that include all the types described by GENTILI & PELLIZER (1964) in a larger area.

In the zone, the Hochwipfel and Dimon formations outcrop in stratigraphic succession, made of turbiditic units (claystones, siltstones and sandstones of the «hercynian Flysch»): s. SPALLETTA et al., 1982 and therein references) and volcanic types belonging to the Dimon formation (following SPALLETTA et al., 1982), with sequences of massive diabases, weakly porphyritic and hyaloophitic spilites, hyaloclastites and tuffs, «pillows lavas». The series is topped by Medium-Upper Permian sandstones (Val Gardena formation).

Petrography

Over a population of 45 samples, fifteen were selected as representative of the different volcanic rocks distinguished in the field. The main petrographic features of the structurally different outcrops are reported below.

- 1) Massive diabases (MD. Type: FB9): medium to coarse grained, subophitic texture with plagioclase (Ca-andesine to Na-labradorite) and Ca-rich pyroxenes (subordinately magnetite). Interstitial chlorite, albite, epidote, carbonates and opaques.
- 2) Weakly porphyritic spilites (WPS. Type: E1, E7, E15, T6, T7): fine grained, weakly porphyritic texture with olivine (chloritized), Ca-rich pyroxenes (sometimes epidotized) and albitized plagioclase phenocrysts and magnetite microphenocrysts. Groundmass made of chlorite, opaques and/or altered feldspars (intersertal texture) and epidotized Ca-rich pyroxenes. In some rocks (E1, E7, E15) chloritization processes are dominant, whereas in some types (T6, T7) albitization and epidotization are largely widespread.
- 3) Hyaloophitic spilites (HS. Type: V10, Z4B, Z9): albitized plagioclase phenocrysts and opaque microphenocrysts in a glassy (palagonitized and chloritized) to intersertal (partially or almost completely altered into fine-grained aggregates of sericite, epidote and clay minerals) groundmass. Vesicles can be present showing rims of palagonite or chlorite and are filled with carbonates and zeolites.
- 4) Hyaloclastites and tuffs (HT. Type: T5, Z6, Z4D): largely glassy (with glass sometimes replaced by quartz + chlorite + albite + sericite + epidote aggregates) with flow textures. They contain fragments, variable in size from few mm to some cm (up to «injecta» of LEHMAN, 1968) with trachytic or intersertal texture.

