

Granites of Straža and their sedimentary roof (SW Serbia)

Graniti Straže i njihova sedimentna povlata (JZ Srbija)

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Ključne reči: granit, povlatne stene, donjotrijajska starost, nemelanžna tektonska građa

Abstract

In many localities on N, NE and SE hillslopes of Murtenica Mt. several varieties of red granites are exposed. The roof rock of granites consists of different Lower Triassic sedimentary rocks which discordantly overlie the granites. They are the Kladnica clastites Fm., Seisian clastites, Bioturbate Fm. and Conglomeratic sandstones and conglomerates.

Apstrakt

Na S, SI i JI padinama planine Murtenice na više lokaliteta pojavljuju se različiti varijeteti crvenih granita. Povlatu granita čine razni tipovi donjotrijajskih sedimentata koji preko njih leže diskordantno. To su: Klastiti Kladnice, Šajski klastiti, Bioturbatna formacija i Konglomeratični peščari i konglomerati.

In many localities on N, NE and SE hillslopes of Murtenica Mt. (section Kokin Brod, 1:25000) were noticed and studied small masses of granites-granitoides named the granites of Straža. Earlier, they have never been investigated in more detail. The authors consider the age of granites to be Lower Triassic (Terzić, 1957; Marković, 1968), Neogene (Čirić et al., 1980), Carboniferous, or older than Carboniferous, and the rock intensively tectonically reworked (Karamata et al., 1996). In our investigations we studied some new features of the granites. The outcrops are mostly in the vicinity of villages Ljubiš, Gornja Bela Reka, Jasenovo and Ojkovica (Fig. 1), and in localities Crni vrh, Gornja ravan, Jadžici and Žunici, on hills Zabrdje and Brkovic glavica, on N hillside of Karaula and in the Metaljka area (Kučani). The localities of granite exposures are mostly covered, so the relations between granites and overlying formations are difficult to observe. They are usually disintegrated to grus, but better

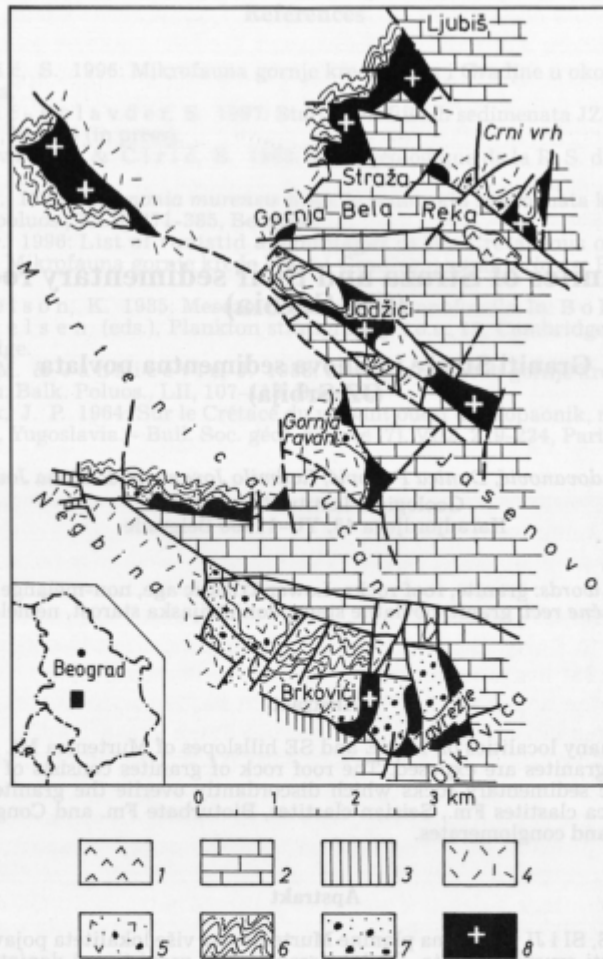


Fig. 1. Geographic position and geology of Murtenica Mt.

- 1 Diabases and spilites; 2 Bedded limestones of Jurassic age;
 3 Olistostrome melange; 4 Limestones of Triassic age;
 5 Volcanic-sedimentary Sirogojno Formation; 6 Bioturbate
 Formation; 7 Conglomeratic sandstones and conglomerates;
 8 Granites

Sl. 1. Geografski položaj i geologija planine Murtenice

- 1 Dijabazi i spiliti; 2 Slojevit krečnjaci jurske starosti;
 3 Olistostromski melanž; 4 Krečnjaci trijaske starosti; 5 Vul-
 kanogeno-sedimentna formacija Sirogojna; 6 Bioturbatna
 formacija; 7 Konglomeratični peščari i konglomerati; 8 Gra-
 niti

preserved rocks are found in localities Zabrdje and Brkovića glavica. Strong tectonic movements and blocky composition (blocks are separated by vertical faults) are typical for this area (Radovanović et al., 1996). Some authors consider granites of

this area as blocks-olistoliths in the Diabase-Cherty Formation (Karamata et al., 1994). However, we found the granites in tectonic position with "rigid" unmelanaged, bedded limestones of Jurassic age (Jovanović et al., 1994; Radovanović et al., 1996). These various rocks (i.e. granites and bedded limestones of Jurassic age) were brought to the same level along vertical faults, and their olistostromal character is excluded.

Granites and granitoids occur in small masses of metric to decametric dimensions in numerous localities. They are characterized by red colour of various intensity depending on size and types of mineral grains, and can be easily recognized in the field. They are often cataclastic, even schistose and weathered to *grus*.

At Straža occur biotitic granites with porphyroidal quartz diorites and elongated lenses of pegmatites. The porphyroidal quartz diorites are dark red coloured with phenocrysts of plagioclase and microlites of plagioclase, biotite, amphibole, clinopyroxene, small quantities of quartz and alkaline feldspars. Small, partly resorbed enclaves of quartzites are noticed. In the vicinity of village Spasojevići fine-grained, dark red coloured porphyroidal granodiorites are exposed which gradually pass in coarse-grained varieties. In the granitoid mass of Mumlavski potok (Hajdučka voda) occur hornblende-biotitic granites and granitoides. In the Zabrdje locality leucocratic granites are cut by small masses of light red coloured aplites. The metamorphic roof rock of granites was not found till nowadays.

As roof rocks of granites-granitoids appear various types of sedimentary rocks of the Lower Triassic age. In the investigated area four types of sedimentary roof rock were established: the Kladnica clastites Fm., Seisian clastites, Bioturbate Fm. and Conglomeratic sandstones and conglomerates. The covered contacts and complex tectonic relations often prevent to establish the clear relations between granites and the overlying beds.

The most rarely as roof rock are the Kladnica clastites Fm., found at localities Crni vrh, W hillslope of Zabrdje, and on road Jadžici-Jagnjilo (Žunici). At locality Crni vrh over granites lie red quartz conglomerates and sandstones of the channel facies of braided river deposits (Jovanović, 1996). Paleodeposits of the braided river channel facies are on the road Jadžici-Jagnjilo too.

The Seisian clastites (Dimitrijević et al., 1987) only rarely appear over granites. They directly overlie granites in localities Jadžina stena, W part of Djunatovac and S part of Brkovića glavica. They are uneven in thickness (10-30 m), and often lie under limestones of the Bioturbate Fm. and over the Conglomeratic sandstones. They are thin bedded (beds not thicker than 5 cm), parallel and rarely cross-laminated. They are represented by ferruginous-carbonate sandstones that pass into sandy limestones or by very micaceous sandstones. Clastites are composed of quartz grains which are predominating (angular, undulose, well sorted), parallel sericite concentrations and Fe-calcite of euhedral shapes. The cement is silica-ferruginous or calcite-ferruginous.

Bioturbate Fm. (Dimitrijević et al., 1987) represents the highest level of the Lower Triassic beds in this area, because it overlies the Kladnica clastites Fm., Seisian clastites and Conglomeratic sandstones and conglomerates. On Straža, where they directly overlie granite, cm-accordion folds were observed (some parts of Bioturbate Fm. are moved over granites, some tectonically reduced). The same case occurs at locality Mumlavski potok (Hajdučka voda). The thickness of formation is less than 20 m. It consists of very thin to thin micritic limestones partially enriched in clayey, silty or sandy fraction, and with visible bioturbations. The limestones can be dolomitized.

Conglomeratic sandstones and conglomerates are the most frequent roof rock of granites-granitoides. They are located on both banks of Kraljev potok, on Brdo and Kolovoz, in Jadjići and Djunatovac, in Gornja ravan, Brkovića glavica and along the line Ilići-Bjeliborje. Contacts with granitic rocks are usually covered, but the minerals derived from granitic rocks are clearly visible and they are distinguished from granites with difficulty. Because of high content of feldspars they are arkosic and subarkosic, and characterized by red colour owing to presence of feldspars, and green colour when chlorite is abundant. In localities Gornja ravan, Jadžina stena, Krst and Zabrdje they are underlain by Seisian clastites and at locality Sanduk by the Bioturbate Fm.

Conglomerates are not compact, usually schistose, with well rounded fragments (3-10 mm), reddish and greenish in colour. Predominate the mono- and polycrystalline quartz and fragments of rocks: quartz sandstones, cherts, schists, shales. They are cemented by sandy or silty matrix or by silica with chlorite and sericite concentrations.

Conglomeratic sandstones are often called "granitic" since their mineral composition is similar to granites (minerals of granites are reworked in this sandstones). Red coloured feldspars are usually fragmented, sericitized or argillized. Presence of chlorite caused the green colour. Besides the feldspars which give arkosic character to rock and confirm its granitic provenance, the quartz is present (unsorted, undulated, often corroded). The sandstones are massive, rarely banded or schistose. They can be silicified (line Ilići-Bjeliborje), or they pass into siltstones (Jadžici and Brdo). Silica cement with chlorite and sericite is the most common, and ferruginous matter is present too.

Conclusion

On the basis of investigations of granites and granitoids, and their sedimentary roof rock in the Ljubiš-Jasenovo area (Murtenica Mt.), we consider the granites of Straža Lower Triassic or Paleozoic in age. They represent the same level as the bedded limestones of Jurassic age, and have not the olistostromal character.

Graniti Straže i njihova sedimentna povlata

Na više lokaliteta, na padinama planine Murtenice uočene su i ispitane manje mase granita-granitoida koje smo zajedničkim imenom nazvali granitima Straže. Tereni na kojima se graniti pojavljuju su uglavnom jako pokriveni, pa je teško posmatrati njihov odnos sa drugim formacijama. Često su grusificirani. Ovo područje (Radovanović et al., 1996) se karakteriše intenzivnom tektonikom i blokovskom građjom (pri čemu su blokovi razdvojeni vertikalnim rasedima). Iako granite ovog područja neki autori (Karamata et al., 1996) smatraju blokovima-olistolitima u okviru Dijabaz-rožnačke formacije, mi smatramo da su u tektonskom odnosu sa "krutim", nemelanžiranim, slojevitim krečnjacima jurske starosti, jer su duž vertikalnih raseda ove različite tvorevine dovedene u isti nivo, pri čemu je isključen njihov olistostromni karakter.

Graniti i granitoidne stene se pojavljuju u manjim masama m-Dm dimenzija. Odluku se crvenom bojom različitih nijansi u zavisnosti od veličine i vrste mineralnih

sastojaka, te su lako prepoznatljivi na terenu. Često su kataklazirani, čak škrljav i grusificirani. Kao sedimentna povlata granitskih-granitoidskih stena pojavljuju se različiti varijeteti sedimentnih stena donjotrijaske starosti. To su: Klastiti Kladnice, Sajski klastiti, Bioturbatna formacija i Konglomeratični peščari i konglomerati. Velika pokrivenost terena i složeni tektonski odnosi sprečavaju da se uoči jasna veza između granita i formacija koje leže preko njih.

Najredje se kao povlata preko granita pojavljuju klastiti Kladnice, predstavljeni, npr. na lokalitetu Crni vrh, crvenim kvarcnim konglomeratima i peščarima kanalskih facija upletenih reka (Jovanović, 1996). I Sajski klastiti (Dimitrijević & Dimitrijević, 1987) se redje pojavljuju kao povlata granita. Leže ili direktno preko granita, ili su često ispod krečnjaka Bioturbatne formacije, a preko konglomeratičnih peščara. Bioturbatna formacija (Dimitrijević & Dimitrijević, 1987) predstavlja najviši nivo donjotrijaskih krečnjaka na ovom području, jer često leži preko sve tri pomenute formacije. Formacija je male debljine sa karakterističnim bioturbacijama. Kao povlata granita-granitoida najčešće se pojavljuju konglomeratični peščari i konglomerati. Kontakti sa granitima su obično pokriveni, ali su u njima jasno vidljivi minerali iz granitskih stena. Zbog visokog procenta feldspata predstavljaju arkoze i subarkoze. Crvenkasti su ili zeleni.

Proučavajući granite-granitoidne Straže i njihovu sedimentnu povlatu na padinama Murtenice, na teritoriji između Ljubiša i Jasenova, došli smo do izvesnih zaključaka koji su bitni za razrešavanje geologije ovog područja. Granite i dalje smatramo pretrijaskim, odnosno stenama paleozojske starosti. Ne smatramo ih olistolitima, jer su izraženom tektonikom dovedeni u isti nivo kao i jurski slojeviti krečnjaci, a da pri tom nije bilo melanžiranja.

Abstract

References

- Čirić, A., Obradinović, Z., Novković, D., Popović, A., Karajičić, Lj., Jović, B. J. & Serdar, R. 1980: Tumač za list Prijepolje K 34-16, OGK 1:100000. Savezni geološki zavod, Beograd.
- Dimitrijević, M. N. & Dimitrijević, M. D. 1987: Trijaska karbonatna platforma Drinsko-Ivanjičkog elementa. - Geološki glasnik, XII, 5-34, Zavod za geol. istraž. SR Crne Gore, Titograd.
- Jovanović, D., Ljubović-Obradović, D. & Radovanović, Z. 1994: Slojeviti krečnjaci kao poseban član Dijabaz-rožnačke formacije (Brajska reka, JZ Srbija). - Vesnik Geološkog zavoda, A i B, 46, 145-153, Beograd.
- Jovanović, D., Popović, D. & Ljubović-Obradović, D. 1996: Geološka karta Jugoslavije 1:50000, Projekt D₂ "Neflišni mezozoik JZ Srbije". Godišnji izveštaj za 1995. godinu, Fond za geol. istraž., Beograd.
- Jovanović, R. 1996: Kontinentalni donjotrijaski crveni slojevi zapadne Srbije. - Doktorska disertacija. Rudarsko-geološki fakultet, 212 p., Beograd.
- Karamata, S., Knežević, V., Puškarev, J. & Cvetković, V. 1996: Graniti Straže. Geologija Zlatibora. - Geoinstitut, Monografije, Pos. izd. 18, 49-50, Beograd.
- Marković, B. 1968: Dijabaz-rožnačka formacija u okolini Zlatibora. - Rasprave Zavoda za geol. i geof. istraž., IX, 1-79, Beograd.
- Radovanović, Z., Ljubović-Obradović, D. & Jovanović, D. 1996: Sedimenti Trijebinske reke (okolina Sjenice, JZ Srbija). VII skup sedimentologa Jugoslavije (aps-trakt, u štampi), Beograd.
- Terzić, S. 1957: Pojava granita na istočnom obodu Zlatiborskog masiva. - Zbornik radova Geol. inst. "Jovan Žujović" 9, 209-212, Beograd.

