

Petrography of the quartz feldspar porphyry dyke from Patagundemgollapalle (Kadiri Mandal, Anantapur District), Andhra Pradesh, India

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ABSTRACT

Quartz Feldspar Porphyry (QFP) occurs as a dyke body intruding into the granitoid country, located near Namala Gudi temple, on the way to Kadiri from Pulivendula. It runs for about 6-8 km in the NNE-SSW direction. It has phenocrysts of quartz and feldspars in a fine grained matrix of the same material. Due to the higher incidence of K-feldspar, the rock has more pink color. At Namalagudi area, this shows extensive brittle deformation. All along the strike, the features remain same, but not the brittle deformation. The quartz appears to have two populations, viz., phenocrysts – the average size is 5 mm (maximum 7 mm) with the ground mass containing grains of less than 0.1mm. The larger grains appear to have nucleation for the growth of the crystal and commonly contain melt inclusions and secondary fluid inclusions.

Key words: QFP, Phenocrysts, K-feldspar, Brittle deformation, Fluid inclusions.

INTRODUCTION

The QFP (Quartz feldspar porphyry) (Rose, 2007) dyke body is located in the topographical map of 57J/3 of Survey of India. It is covered between the 14° 18' 48'' and 14° 20' 20'' North latitude and 78° 10' 21'' and 78° 12' 35'' East longitude, thereby covering nearly an area of about 12 km². This appears to be the first report of QFP occurring as dyke body in this area. The nearest township is Pulivendula of the Kadapa district. This granitoid terrain is traversed by number of basic dykes ranging in composition from olivine dolerite to normal dolerite. But there is the conspicuous Quartz Feldspar Porphyry (QFP), seen intruding into the granitoid terrain and further going below the sediments of the Cuddapah Super group, indicating that it is younger than the granitoids and older than the Cuddapah sediments, i.e., the Gulcheru Quartzite of the Papaghni Group. The dyke body occurs as strike ridge dipping steeply towards the west. The outcrop occurring near the temple Namalagudi, is the major one. It is located on the right side of the Pulivendula–Kadiri new road (SH-28). This outcrop runs nearly for about 1.75km in the NNE - SSW direction and has a height of 20 m. After 1.75 km, it occurs as discontinuous outcrops and runs further for about 1km in the SSW direction having a height less than 20 m. The third QFP is located south of the Vepalapalle village, where the outcrops have an

almost east–west trend and runs for less than 500 m with a height of 20 m.

Petrologically, this rock consists of quartz and feldspar occurring as phenocrysts. The matrix is also of the same material but is of fine grained nature. Due to the higher incidence of K-feldspar, the rock has more pink color. On way to the village Subbanaguntapalle, the QFP has dark brown matrix with phenocrysts of feldspar. This is overlain by the pink variety of QFP. In addition, in the stream section, adjacent to the road on way to Subbanaguntapalle, there are a few outcrops of QFP with enclaves of green chloritic material. In addition, there are many dolerite dyke events that criss-cross the granitic terrain. In fact the basic dyke cuts the QFP, reflecting that the latter is the first event of dyking activity. The country rock is represented by peninsular gneiss in the southern part, intruded by younger various granitoid events in the northern part of the area under report. The event stratigraphy of the granitoids and the dyking activity has also been worked out. Quartz veins trending mainly east-west, represent the youngest phase of igneous activity.

GEOLOGICAL SETUP

Event stratigraphy of the granitoids (Early Units)

The country rock is mainly granitoid in nature. There