

Lithofacies, petrography and vertebrate paleontology of Miocene- Pliocene Nagri Formation exposed at Kanati Area, District Khushab, Punjab, Pakistan

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Abstract

The Siwalik sediments are widely distributed in foreland areas of Pakistan, India, Nepal and Bhutan. These post tectonic deposits contains vast phylogenetic trends of modern vertebrate species, especially those dating back to Miocene-Pliocene. The study area i.e. Kanati, District Khushab was studied based on three aspects of Miocene-Pliocene Nagri Formation. The first one being the study of lithofacies of the exposed Nagri Formation. The Formation here predominantly contains sandstone, silt and clay with subordinate conglomeratic facies. The clay exposed here is mostly brick red in color showing oxidizing conditions, while the sandstone was mostly yellowish to grayish containing mainly mono and poly crystalline quartz and feldspar. Spheroidal weathering is quite common in sandstone units. The facies represent a cyclic channel deposition, predominantly starting from sandstone facies, through conglomeratic, claystone, clay and then terminate finally at sandstone facies. The polymict conglomerate beds containing mostly pebble size fragments. The petrographic study of the sandstone samples revealed mostly quartz with subordinate feldspar and lithic fragments of recycled Oregon. X-Ray Diffraction technique reveals chlorite to Illite clay minerals with major constituent as quartz. The third most important study was of vertebrate content discovered in Nagri Formation. This includes generalized descriptions of fossils recovered at site. Study is done up to various orders and sub orders of Perissodactyls and Artiodactyls (Genera include Stegodon, Selenoportax, Hipparion). Life style restoration of some of the well preserved specimens such as Gavialis browni and Selenoportax was done at Pakistan Museum of Natural History, Islamabad. Dentation pattern is used for identification of some of the well-known genera of herbivorous fossils discovered from Nagri Formation.