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**LATE PROTEROZOIC SUBDUCTION-RELATED VOLCANO-  
SEDIMENTARY SUCCESSION OF WADI MADBUS, SOUTHEASTERN  
SINAI, EGYPT**

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**ABSTRACT**

**Key Words:** Late Proterozoic, Dokhan Volcanics, Geochemistry, Petrogenesis, Sinai, Egypt.

Wadi Madsus area is occupied by a succession of volcanic and sedimentary rocks that were subjected to low pressure metamorphism. The succession is intruded by younger gabbros, younger granitoids and a series of NE-trending post-granitic dykes. The metamorphosed volcanics are dominated by andesite and dacite with minor basalt and basaltic andesite. The associated pyroclastics are minor and represented by fine to coarse crystal and lithic crystal tuffs. The metamorphosed clastic sediments are immature and commonly foliated in ENE and WNW directions. They are represented by siltstones, wackestones and conglomerates. The petrographic investigation revealed that these sediments were derived from the erosion of the underlying volcanics.

Geochemically, the Madsus volcanics have a wide range of SiO<sub>2</sub> and a high-K calc-alkaline nature. The basaltic rocks are enriched in the high field strength elements (HFSE), while the intermediate volcanics have percentages of SiO<sub>2</sub>, TiO<sub>2</sub>, Al<sub>2</sub>O<sub>3</sub>, K<sub>2</sub>O and P<sub>2</sub>O<sub>5</sub> within the range of the values of the orogenic andesites. Behavior of trace elements revealed subduction zone fluids enrichment for the studied volcanics. Chondrite-normalized REE pattern of Madsus volcanics show marked enrichment in the light rare earth elements (LREE).

The abundance of andesite with significant amount of immature clastic sediments, the high-K calc-alkaline nature, high LILE/HFSE ratios and the enrichment of HFSE and LREE in the Madsus volcanics confirm that they are subduction-related and were formed in an active continental margin tectonic setting.