# Geochemical assessment of the Upper-Cretaceous- Paleogene succession (Gurpi Formation) in the Poshteh section of the Kabir-Kuh structure

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**Abstract**

The Gurpi Formation (late Cretaceous-Paleogene) has been considered as a cap rock and source rock because of its stratigraphic position between two important Bangestan and Asmari reservoirs. The purpose of this study is geochemical evaluation of the Gurpi Formation as a possible source rock at Poshteh section in Kabir-kuh structure, consist of hydrocarbon enrichment (quantity), kerogen type (quality) and thermal maturity of organic matter. The TOC content of 31 studied samples from the Upper Cretaceous deposits of Gurpi Formation ranges from 0.04 to 1.67 (average 0.32 wt.%) and 0.13 to 0.33 (average 0.22 wt.%) in13 studied samples from the Paleogene succession. Also, the S2 parameter varies between 0.02 to 6.66 (average 0.87 mgHC/gr rock) and 0.03 to 0.26 (average 0.07 mgHC/grRock) for the Upper Cretaceous and Paleogene successions respectively, which means poor to fair hydrocarbon potential for Upper Cretaceous and poor for Paleogene deposits in studied section. The HI/OI and the S2/TOC diagrams indicate that the Upper Cretaceous deposits are mainly composed of type II to II / III kerogen, related to their suboxic marine environment, and the ability of oil and gas generation. However, the Paleogene succession mostly lacks the ability to produce hydrocarbons. The determined organic facies for the Upper Cretaceous succession range C to D and for the Paleogene succession range BC and C. Maturity indicator parameters of PI and, Tmax reveals oil generation window for the Gurpi samples in the studied area.

**Keywords**: Kabir-kuh, Gurpi formation, Late Cretaceous-Paleogene, Hydrocarbon generation potential, Kerogen type.