

Palynofasies study of Aitamir formation in mozduran section

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Abstract

Kopeh Dagh construction sedimentary are is an intercontinental basin wich begins from khazar sea ,passes through Turkmenistan and Iran,then inter Afghanistan. Aitamir formation is one of the sedimentary unit of this basin that has been studied based on some fosils such as Amonit several times. In this research ,the mentioned formation for the first time is being studied based on Palinomorphs. The supored area is located in No. 110 Kilometers of Mashhad-Sarakhs road,with geographical features North latitude 36 6 13 and Earst longitude 40 60 14 , and its litology is mostly of Shale and Glakonit sand stone shale. 50 samples of Aitamir formation ,have been taken based on Palinomorph parameters and 200 palynologic slides have been make. with study of this slides and according to palynomaserals, SOM and Palinomorph of the slides and also use of Tyson triple diagram,the fasies formation were difined. using of Tyson diagram showed that most of the samples are in marginal dysoxic-anoxic basin palinofasies and indicate marginal seashore and low oxygen environment.

Key words:*Kopeh Dagh – Aitamir – mozduran - palynomaserals- palynomaserals- palinofasies*

Introduction

Koph Dagh sedimentary basin is in the E.N of Iran and south of Turan plate. Aitamir formation is one of the stratygraphic unites of this basin. The age of this formation is Albian-Senomanian. The mentioned formation is expanded of eastnorthen Khope Dagh sedimentary basin to 70 Km of eastnorthen Gonbad Kavoods with diffrent thickness which is thicken from East to West. The litology of the lower part of Aitamir formation is Glakonity sand stone and shale and the upper part is shale and thin beds of Glakonity sand stone. The lower boundray of the mentioned formation with Sanganeh formation is gradual and it's upper boundary with Abderaz formation is erosive (fig1).

After initial studies, fielding abservation, sampling environment is selected and after providing and studing the palynological slides with help of Tayson triple diagram, is defined palynofaciess of section.

Discussion

Specify for determination palinofaciess of Aitamir formation sediments in Mozduran section, have been studied about 200 palynological slides of 50 sedimentary samples. Particles extant in palynological slides wich are used in environmental comments, palynofacies and palynoecology, are in three groups:

Amorph material (SOM), palynomorphs (Dinoflagellata, Acritarshs, Tasmanitids, iner shell of foraminifers) and palynomaserals. (Tayson, 1993).

The components in palynological slides are divided into tow parts as follow:

1. Allochthonous part
2. Autochthonous part, wich this parts are controlled by ecological factors. (Vanderzwan, 1990).

The slides wich are made from Aitamir formation, in all samples consist of diffrent relations of 3 groups of palynomorph ingredients (palynomaserals, palynomorphs, unformed organic material) wich they are indicative of open marian environment with medium to high energy condition.

Sandy bands of Aitamir formation don't have any palynomorph elements.

For more positive evaluation, Tayson triple diagram is used as follow:

In each slide 300 palynologic particle is numbered random and percent of palynomaserals, palynomorph and SOM in each sample wich has a important role in identifying palynofacies, achived with graphic statistic metods.

Then the percentage are transported to Tayson diagram and Aitamir formation palynofacies is modified in this section.

The studing slides are divided in three palynophacies based on Tayson diagram (fig2).

Palynophacies I:

In this palynofacies there is the low amount of SOM and between 15% - 30% wich the predominant of SOM are light and are indicative of low oxygen environment. Palynomaserals are more than SOM. Palynomaserals are about 70% - 85%. The palynomacerals often are **IV** type.

The number of Daynosists are very low and in some slides they reach to zero. the samplesas: 1-3-10-12-14-20-23-25-29-30-35-36-38-44-45-48 are in this palynophacies and there is much focous of diffrent palynomaserals wich confirm the marginal and shallow environment near the sea-shore. Tayson diagram shows marginal dysoxic-anoxic basin for this palynophacies (fig 3).

Palynophacies II:

In this palynophacies the amount of SOM is between 40% - 50% and the amount of palynomorphs is between 5% - 10%. Tayson diagram shows proximal suboxic-anoxic shelf for this phaciess. The samples of 7-11-15-18-22-28-34-50 are in this palynophacies.

In this palynofacies, hige protected SOM is related to condition basin, presentation and excess of palynomacerals consequent turbidit flows or near source.

Palynophacies III:

In this palynophacies the number of SOM are increased related to for going palynophacies, and about 70% - 80% and palynomacerals about 20% - 25% and the amount of palynomorph is between 3% - 5%.

This palynophacies was viewed in samples 5-6-9-12-16-17-22-28-32-34-42-43.

Tayson diagram shows distal suboxic-anoxic-basin for this palynophacies.

Dark and black SOM is possibly result of decomposition **IV** palynomaserals. This palynophacies shows the anaerobic condithion dominate sedimentary basin.

Conclusions

1. Three palynofacies for Aitamir formation has been offered according to content of palynological slides.
2. Predominant palynofacies Aitamir formation in Mozduran section is marginal dysoxic-anoxic basin.
3. Sedimentary environment of Aitamir formation inferred marginal and shallow environment near the sea-shore with medeium to hige energy.
4. Marin and non-marin palynomorphs in Mozduran section are rare.

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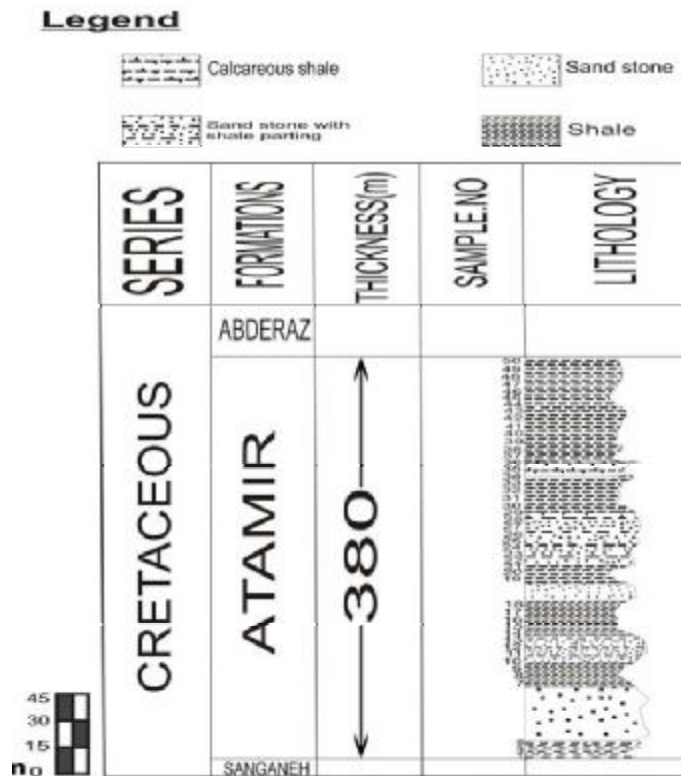
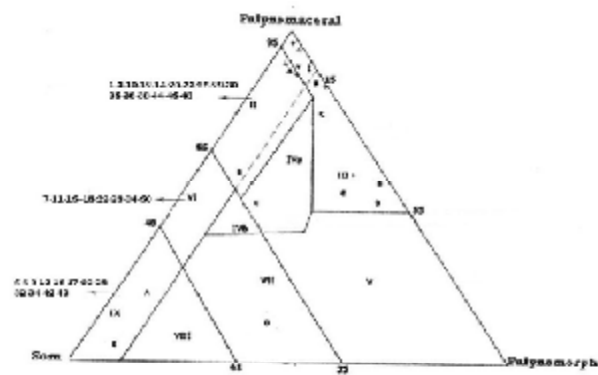


Fig 1: stratigraphic colum of Aitamir formation



- I : highly proximal shelf or basin
- II : marginal dysoxic-anoxic basin
- III : heterolithic oxic shelf (proximal shelf)
- IV : shelf to basin transition
- V : mud-dominated oxic shelf
- VI : proximal suboxic-anoxic shelf
- VII : distal dysoxic-anoxic shelf
- VIII : distal anoxic shelf
- IX : distal suboxic-anoxic basin

Fig 2 : Studied samples in triple Tayson diagram



Palynofacies I

Palynofacies II

Palynofacies III

Fig3: Palynofacies I, II, III