First Report of species of Stomatorbinabikhorsti in Upper Paleocene–Lower Eocene deposits in Jahrum Formation, eastern part of the coastal Fars (Southern Iran)

1Mahdi Hosseinzadeh, 2JahanbakhshDaneshian, 3Seyed Ali Moallemi, 1Ali Solgi

1Department of Geology, College of Basic Science, Tehran Science and Research Branch, Islamic Azad University, Tehran, Iran.
2Department of Geology, Faculty of Earth Science, Kharazmi University of Tehran, Iran.
3Reservoir Geology Division, Exploration and Production Department, Research Institute of Petroleum Industry, Tehran, Iran.

ARTICLE INFO
Article history:
Received 12 October 2014
Received in revised form 26 December 2014
Accepted 1 January 2015
Available online 20 February 2015

Keywords:
Stomatorbinabikhorsti, Jahrum Formation, Coastal Fars, Zagros, Iran

ABSTRACT
Foraminiferal assemblages in the eastern part of the coastal Fars Province were studied to introduce the existing biozones and determine the age of Jahrum Formation. Stomatorbinabikhorsti is one of the known species in the deposits of Jahrum Formation in the stratigraphic section of Gavbast section in the eastern part of the coastal Fars Province. This species was present in three of the 120 samples taken from the deposits in Jahrum Formation, and is reported for the first time from Iran (the Zagros Sedimentary Basin) with the age range of Upper Paleocene-Lower Eocene.

INTRODUCTION

The Zagros fold-and-thrust belt extends for about 1800 km through Iraq and southern Iran, and with the associated foreland basin, represents one of the oldest and richest hydrocarbon provinces known [17]. Jahrum Formation is 467 meters thick in the type section and includes dolomite and dolomitic limestones. The lower boundary of this Formation in the type section lies conformably on marl and dolomites of Sachun Formation [10]. In coastal Fars, and in the study region, the lower boundary between Jahrum and Pabdeh Formations is gradual. In the Zagros Basin, the eastern part of the coastal Fars Province is among the regions where deposits of Jahrum Formation extend, and considerable thicknesses of these deposits can be measured. Large benthic foraminifera are considered index and useful fossil communities in determining the relative age of Cenozoic sequences. Jahrum Formation is one of the important reservoir formations in the Zagros Basin; therefore, more precise identification and investigation of this formation based on fossil fauna provide useful and valuable information for research and exploration activities. Although paleontologist such as Hottinger[9] have identified various new genera and species of foraminifera, study of the stratigraphic and geographical spread of these newly reported species has not attracted much attention from Iranian experts of fossils. The purpose of this paper is to report, for the first time, the presence of the species Stomatorbinabikhorsti in the stratigraphic section of Gavbast in Jahrum Formation.

Study area and methodology:

The Gavbast anticline, located in the southwest of Lar, is 30 kilometers long and 7 kilometers wide. The Gavbast section with latitude of 27°52' and longitude of 53°52' is situated about 5 kilometers south of Emad-Deh Village and southwest of Lar (Figure 1). Jahrom Formation in this section has a total thickness of 423 meters with dolomite and limestone lithologies. The limestones are of medium and thick bedding and contain large quantities of benthic foraminifera (Nummulites, Linderina, Coskinolina, and Miliolids) together with skeletal fragments of Echinoid, bivalves, and bryozoan (Figure 2). The lower boundary of Jahrom Formation in this section gradually lies on shaly Pabdeh Formation, and paleontological studies have confirmed that Asmari Formation covers the shallow limestones in the upper part of Jahrom Formation with a paraconformity.

Corresponding Author: Mahdi Hosseinzadeh, Department of Geology, College of Basic Science, Tehran Science and Research Branch, Islamic Azad University, Tehran, Iran.
E-mail: mhd_hoseinzadeh@yahoo.com
Study of the available microfossils in Gavbast stratigraphic section led to the diagnosis and identification of 41 genera and 54 species of benthic and planktonic foraminifera, 2 genera and species of red algae, one genus and one species of bryozoan, and a series of other macrofossil segments. *Stomatorbinabikhorsti* was found at the base of the section and in the three specimens GB.3, GB.5, and GB.29.

*Fig. 1*: Location and Geological map of the study area. (a) General map of Iran showing eight geologic provinces. (b) Subdivisions of the Zagros Mountains and Fars Sub-basin. (C) Situation of the study sections in Fars province, adapted from Sahraeyan *et al.*, (2013).

Study of the available microfossils in Gavbast stratigraphic section led to the diagnosis and identification of 41 genera and 54 species of benthic and planktonic foraminifera, 2 genera and species of red algae, one genus and one species of bryozoan, and a series of other macrofossil segments. *Stomatorbinabikhorsti* was found at the base of the section and in the three specimens GB.3, GB.5, and GB.29.

*Fig. 2*: Biostratigraphy of the Jahrum and Asmari Formation in the Gavbast anticline, Emad-deh section.

Considering the benthic foraminiferal assemblages, the three subzones numbers 48, 49, and 50 [17] are defined for the above-mentioned section (Table 1). Of the 423 meters thickness in Jahrum Formation, 162 meters are Upper Paleocene-Lower Eocene and 261 meters Middle Eocene deposits (240 meters Lutetian and 21 meters Bartonian).
Table 1: Biozonation of the Jahrum Formation (Wynd, 1965)

<table>
<thead>
<tr>
<th>Age</th>
<th>Biozonation</th>
<th>Formation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Middle Eocene</td>
<td>48. Somalina subzone</td>
<td>Limestone of the Jahrum Formation In the Fars area</td>
</tr>
<tr>
<td>Middle Eocene</td>
<td>49. Linderina subzone</td>
<td>Limestone of the Jahrum Formation In the Fars area</td>
</tr>
<tr>
<td>Middle Eocene</td>
<td>50. Dictyoconus/ Coskinolina/ Orbitolitescomplanatus assemblage subzone</td>
<td>Upper Limestone of the Jahrom Formation</td>
</tr>
</tbody>
</table>

3. Previous works and Systematic description:

Loeblich & Tappan [11] reported the presence of the genus *Stomatorbina* in Eocene to Holocene sediments from Australia and Cuba. The genus and species *Stomatorbinabikhorsti* of the Paleocene Epoch were reported from Central Dalmatia (Croatia) and Greece by Cosovic et al., [1] and Di Carlo et al., [5], respectively. We report *Stomatorbinabikhorsti* for the first time from the Iranian Zagros Basin in Jahrum Formation deposits found in Gavbast section with an age range of Upper Paleocene-Lower Eocene.

**Systemic Descriptions:**

- **Phylum** SARCOMASTIGOPHORA Honigberg, [8]
- **Subphylum** SARCODINA Schmarda, [15]
- **Superclass** RHIZOPODA von Siebold, [16]
- **Class** GRANULORETICULOSA Desaedeer, [4]
- **Order** FORAMINIFERIDA Eichwald, [7]
- **Suborder** ROTALIINA Delag & Herouard, [3]
- **Superfamily** ANNULOPATELLINACEA Loeblich and Tappan, [12]
- **Family** MISSISSIPPINIDAE Saidova, [14]
- **Subfamily** STOMATORBININAE Saidova, [14]
- **Genus** STOMATORBINA Doreen, [6]
- **Type species** Lamarckinatorrei Cushman and Bermudez, [2]
- **Stomatorbinabikhorsti** (Reuss)
- **Stomatorbinabikhorsti** (Reuss) Cosovic et al., [1]
- **Stomatorbinabikhorsti** (Reuss) Di Carlo et al., [5]

This species has a wall made of thickened porous lime shell formed by secondary layers on the suture line in the dorsal, spiral, and ventral directions. The shell is unequally convex on both sides. The semi-crescent shaped cells and the suture line are thickened in a trochospiral. The orifice is located in the inner margin of the aperture and the suture is partly covered by the ventral fin (Figure 3a, b).

![Fig. 3: (a) and (b) genus and species of the Stomatorbinabikhorsti](image)

**Conclusion:**

The genus and species of *Stomatorbinabikhorsti* belong to the large benthic foraminifera in shallow waters, and this is the first time this species is reported from the coastal Fars (the Zagros Sedimentary Basin) with the age range of Upper Paleocene-Lower Eocene.

**REFERENCES**


