Ooids from Turkey and Egypt in the Eastern Mediterranean and a Love-story of Antony and Cleopatra

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Summary

Cleopatra's beach is one of the most famous in Turkey for its distinctive white sand, composed largely of ooids. Legend has it that the Roman leader, Mark Antony, had this sand shipped from Alexandria in Egypt to create a beach for his lover Cleopatra, on Sedir Island in Gökova Bay, SE Aegean Sea. This study examines the reality of this legend from a comparison of the oolitic sand from Cleopatra’s beach in Turkey with oolitic sand from the coast west of Alexandria in Egypt, the home city of Cleopatra, and only place in the Mediterranean where Holocene ooids occur in abundance.

The ooids of Cleopatra’s beach have a pale brown-creamy colour and dull surface texture. Most grains are spherical, with nuclei of terrigenous grains, peloids and bioclasts. The Cleopatra ooids have all the features typical of high-energy, shallow-marine ‘classic’ ooids, but they occur in a very low energy bay and show evidence of being out of place there (microborings, discolouration, dull surface). In terms of size, shape, cortex fabric and mineralogy, the Cleopatra ooids show great similarities to those from the northern coast of Egypt, west of Alexandria. The Alexandria ooids examined have a white-cream colour with a high polish, although there are fewer silicate nuclei compared to the Cleopatra ooids. On the basis of textures and microfabrics, the hydrographic conditions at Gökova bay, the relatively small quantity of oolitic sand in this tiny pocket beach and the absence of this type of sand anywhere else in Turkey, it is concluded that the oolitic sand was brought to Cleopatra’s beach from somewhere else, and that the northern Egyptian coast was the most likely source. This lends credence to the Antony and Cleopatra story. Calculations suggest that some 15 Roman corn barges would have been required to transport the quantity of sand now present on the beach in Turkey.

1 INTRODUCTION

Cleopatra was the name of seven queens of ancient Egypt, but by far the most famous was Cleopatra VII (circa 69-30 BC). In 51 BC, Ptolemy Auletes, King of Egypt, died and left the kingdom in his will to his eighteen year-old daughter, Cleopatra, and her younger brother Ptolemy XIII, who was twelve at the time. Her extraordinary efforts to revive Ptolemaic power through her forceful personality and political skill, as well as romantic liaisons with prominent Romans, have been the subject of many stories, including William Shakespeare’s Antony and Cleopatra and George Bernard Shaw’s Caesar and Cleopatra.

Cleopatra’s beach on the small uninhabited Sedir Island in Gökova Bay, not far from Marmaris in the southeastern Aegean Sea (Figs 1, 2) is one of the most famous beaches in Turkey and a popular destination for tourists. The island was an important settlement during the early Anatolian and Roman periods and was known as Cedreia (or Kedreia). There are a number of archaeological sites on the island including a temple to Apollo and an amphitheatre. The beach is renowned for its sand, composed of white ooids, and the fable surrounding its origin. The story goes that the Roman ruler Mark Antony had the sand shipped from Egypt, effectively to create the first man-made sandy beach in the world. This type of sand is a complete anomaly on the northern/eastern shores of the Mediterranean, and this has lent a degree of credibility to the story that when Queen Cleopatra of Egypt came to Sedir Island with her lover Mark Antony, the beach did not come up to her expectations. Thus shiploads of sand were brought to the island from Egypt to create a ‘paradise on Earth’ in which she and Antony could frolic (www.Turkypagesonline.com/SedirIsland.htm). This artificial beach was a gift from Antony to Cleopatra sometime between 37-32 BC (Özhan, 1990). Unfortunately, there is no record of this story in the classical literature, although there are many accounts of gifts to Cleopatra from Mark Antony, including forests in Antalya Province,

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Anatolia, not that far from Gökova Bay, from which cedar wood was obtained for ship-building (Strabo, 7 BC).

The present study aims to assess the reality of this legend by making a comparison of the oolitic sand at Cleopatra’s beach with that from the northern coast of Egypt, the only other area of the Mediterranean where oolitic sand occurs in abundance (e.g., Hilmy, 1951). Sub-recent ooids have been reported from a lagoonal beach in Tunisia, where they form beach ridges (Strasser et al., 1989) and they do occur in the Gulf of Suez-Red Sea area (Sass et al., 1972).

2 GEOLOGICAL SETTING OF OOIDS FROM CLEOPATRA’S BEACH, TURKEY

Gökova Bay in the SE Aegean Sea is a large embayment surrounded by high mountains on the northern shoreline and a more subdued topography to the south and east. Sedîr Island is only 200 m from the mainland and there are two beaches in small bays on the island (Fig. 2). The tiny beach in the smaller bay is made of the ooids, giving the distinctive white appearance, whereas the second beach is composed of quartz-dominated sands and gravels, as virtually all other beaches in Turkey. This one has the more typical pale yellow colour of silicate sands. Cleopatra’s beach is the only one in Turkey composed of oolitic sand.

Cleopatra’s beach is a pocket beach located within a small bay that opens to the north-northwest, and the fetch is limited to around 8 km. The low-cliffed shoreline of the small bay is made of rugged conglomerate (of Tertiary age) and boulders of it, that effectively dissipate wave energy (Özhan, 1990). This boulder-conglomeratic shoreline extends about 85 m on the western side and 113 m on the eastern side, whence it deflects farther eastward (Fig. 1). An evenly placed single row of well-shaped stones with a man-made appearance forms a low wall along the southern boundary of the beach, separating the oolitic foreshore from the backshore vegetation and soil, that is about 1 m higher than the beach itself. The beach is around 35 m in length, and the intertidal area stretches for about 15 m from low to high water. The thickness of the ooid sand layer increases from zero near the stone wall to about 80 cm near the water’s edge. The oolitic sand then thins out into the shoreface zone, disappearing completely in about 9 metres of water. A total area of some 120 m x 50 m is covered by ooids in the nearshore zone. Özhan (1990) calculated the total volume of ooids as about 10,000 m$^3$ (about 18,000 tons). Beneath the oolitic layer, there are well-sorted gravels and sands, similar to the sediments of the other beach on the island.

3 GEOLOGICAL SETTING OF OOIDS FROM THE EGYPTIAN COAST

Ooids occur in abundance along the Mediterranean coast of Egypt for at least 100 km west of Alexandria, which

![Fig. 1. Detailed map of Cleopatra’s beach, Turkey (re-drawn after Özhan, 1990).]