Ancient Greek ships traded more than just wine

October 17 2011, by Deborah Braconnier

Greek amphora, National Archaeological Museum of Athens, showing the goddess Athena. Image: Wikipedia.

(PhysOrg.com) -- While many historians have assumed that Greek sailors were using amphorae, or ancient storage containers, to transport and trade wine, new DNA testing is providing evidence that these containers were used for many different products.

The research, published in the Journal of Archaeological Science,

reveals the DNA results of vegetables, herbs and nuts in a sampling of jars tested.

Led by archaeologist Brendan Foley from Woods Hole Oceanographic Institution (WHOI) and geneticist Maria Hansson from Lund University in Sweden, the researchers retrieved DNA samples from nine amphorae that were obtained from sunken ships and dated back to the fifth and third centuries BC.

As assumed by historians and the trade of wine, the DNA of grapes was found in five of the nine containers. Six of the jars also showed the DNA of olives, presumably from olive oil. The containers also revealed DNA hits from ginger, walnut, juniper, legumes, mint, oregano and thyme. Each container showed multiple DNA samples suggesting that the containers were reused and carried different products each time.

Archaeological and written evidence from the time period shows that trade included such items as wine, oil, honey, resin, fruit, fish and other meats. The results of this study provide more evidence that wine was not the only product traded from these containers.

The researchers plan to expand their study and have their eyes on a fully excavated third-century-BC ship wreck which was located near Kyrenia, Cyprus. They hope to test all the amphorae found on the ship to help create a picture of ancient trade.

By going on step further and testing containers from different periods, they hope to be able to paint a clear picture of how the containers were used for trade throughout different time periods and when exactly different crops were first introduced.

More information: Aspects of Ancient Greek trade re-evaluated with amphora DNA evidence, *Journal of Archaeological Science*,

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Abstract
Ancient DNA trapped in the matrices of ceramic transport jars from Mediterranean shipwrecks can reveal the goods traded in the earliest markets. Scholars generally assume that the amphora cargoes of 5th-3rd century B.C. Greek shipwrecks contained wine, or to a much lesser extent olive oil. Remnant DNA inside empty amphoras allows us to test that assumption. We show that short ~100 nucleotides of ancient DNA can be isolated and analyzed from inside the empty jars from either small amounts of physical scrapings or material captured with non-destructive swabs. Our study material is previously inaccessible Classical/Hellenistic Greek shipwreck amphoras archived at the Ministry of Culture and Tourism Ephorate of Underwater Antiquities in Athens, Greece. Collected DNA samples reveal various combinations of olive, grape, Lamiaceae herbs (mint, rosemary, thyme, oregano, sage), juniper, and terebinth/mastic (genus Pistacia). General DNA targeting analyses also reveal the presence of pine (Pinus), and DNA from Fabaceae (Legume family); Zingiberaceae (Ginger family); and Juglandaceae (Walnut family). Our results demonstrate that amphoras were much more than wine containers. DNA shows that these transport jars contained a wide range of goods, bringing into question long-standing assumptions about amphora use in ancient Greece. Ancient DNA investigations open new research avenues, and will allow accurate reconstruction of ancient diet, medicinal compounds, value-added products, goods brought to market, and food preservation methods.

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