

An Interdisciplinary Study on the Ancient Egyptian Wines: The Egywine Project

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Abstract. This article presents the research results of the ‘Irep en Kemet’ Project that studies the Ancient Egyptian wine culture and the newly developed website of the research project [www.wineofancientegypt.com] to transfer the knowledge and disseminate the results. For the first time, the corpus of the viticulture and winemaking scenes in the ancient Egyptian private tombs has been developed, together with the bibliographical and scene-detail databases. The second phase of the ‘Irep en Kemet’ website includes an interactive archaeological map of Egypt with the viticulture and winemaking scenes, and also the databases and the results of the research. Moreover, the objectives and preliminary results of the EGYWINE project that investigates the wine jars and wine inscriptions, and the ancient DNA of the Egyptian wines, are presented.

Keywords: Ancient egypt · Grapes · Wines · Wine jars · Inscriptions · Paleogenomics

1 Introduction

The research on the subject of Ancient Egyptian wines is an interdisciplinary research including several studies and research projects.

The ‘Study of the viticulture and oenology scenes in the Egyptian tombs’ scientific project (2011–2014) is a scientific project, directed by Dr. Maria Rosa Guasch Jané, was hosted by the *Faculdade de Ciências Sociais e Humanas* of the *Universidade Nova* in Lisbon (Portugal), and funded by the *Fundação para a Ciência e a Tecnologia* (FCT) of the Portuguese Ministry of Education and Science. The research project has created the corpus of the viticulture and winemaking scenes in the ancient Egyptian tombs.

The “Ancient Egypt’s Wine Rebirth” Egywine project (2016–2018) is the Marie Skłodowska Curie Grant number 699858 (H2020-MSCA-IF-2015) funded by the European Commission, and hosted by the *Mondes Pharaoniques* (UMR 8167 “*Orient et Méditerranée*”) directed by Professor Pierre Tallet at the *Université Paris-Sorbonne* in Paris, France. Egywine project studies the ancient Egyptian wine jars and wine inscriptions and is carrying out the first ever paleogenomic analysis of the ancient DNA (aDNA) of Egyptian wines. Egywine addresses the viticulture origins, production and preservation of the ancient Egyptian wines, and the diffusion of the Egyptian wine culture legacy to

Europe. To transfer the knowledge and disseminate the research results, the website ‘Irep en Kemet’ [www.wineofancientegypt.com] has been developed and is now updated with the recent research on this subject.

2 Study of the Colour of the Egyptian Wines

The symbolism of the wine in ancient Egypt was based on its red color, not only because of the relation established between wine and the blood of the resurrection god Osiris, but also because of the reddish color of the River Nile during the annual flood-with ferruginous sediments coming from the Ethiopian mountains-, when the harvest time for grapes started [1, 2]. The Egyptian mythology related the wine only to the red color, and no textual references to white wine—or to red wine- from the Dynastic period (3100–343 BC) have been found in Egypt up to now. The first mention of white wine in Egypt is from Athenaeus of Naucratis, who lived during the 3rd century BC, in his book *The Deipnosophistae*, where he explains that Mareotis wine, in the area of the lake Mariout near the city of Alexandria, was “excellent, white and enjoyable, aromatic...” [3].

During my PhD at the Nutrition and Food Science Department, Pharmacy Faculty of the *Universitat de Barcelona*, the kind (color) of the wines that were made in ancient Egypt was investigated. An analytical method [4, 5] for archaeological residues of wine was developed using the liquid chromatography mass spectrometry in tandem (LC/MS/MS) technique. Two compounds were identified in archaeological residue samples from Tutankhamun’s amphorae using the LC/MS/MS method: tartaric acid, as grape marker, and syringic acid derived from malvidin, the latter being the main compound responsible for the red color of grapes and wines, as red grape marker [4, 6, 7]. The results of analysing residue samples from Tutankhamun’s amphorae revealed that in ancient Egypt red and white wines were given the name *irp* [5, 7].

The analytical results added new information to the inscription on the amphorae: about the type of wine contained. There was a red wine in Tutankhamun’s amphora number *Journal d’Entrée (JE)* 62314 [5, 7] at the Egyptian Museum in Cairo, with the inscription “Year 9, wine of the Estate of Aten of the Western River, chief vintner Khaa”, and a white wine was contained in Tutankhamun’s amphora *JE* 62316 [5, 7] with the inscription “Year 5, wine of the Estate of Tutankhamun, ruler of Thebes in the Western River, chief vintner Khaa”. The results of the analyses also confirmed that in Egypt, during the New Kingdom period, three kinds of grape products were made [5]: red wine, white wine and the *shedeh*, a red wine with a different preparation.

The origin and nature of the *shedeh*, which has no translation, was a mystery since a century ago, with pomegranates or grapes having been proposed as a raw material. According to Papyrus Salt 825 (BM 10051) of the Late period (715–332 BC), the only text found so far that mentions the elaboration of the *shedeh*, it was filtered and heated; nevertheless, due to a damage in the Salt papyrus, the botanical source of *shedeh* remained unknown [5, 8–10].

The results of analyzing a sample of a residue from the *shedeh* amphora found in Tutankhamun’s burial chamber (*JE* 62315, Carter number 206 [11]), bearing the inscription “Year 5, *shedeh* of very good quality of the Estate of Aten of the Western River,

chief vintner Rer” [12] confirmed that *shedeh* was a red grape wine [5, 6]. Further research suggested the use of the three different wines found in Tutankhamun’s Burial chamber were for the King’s three-step resurrection ritual [13].

3 The Corpus of the Viticulture and Winemaking Scenes

Viticulture and winemaking scenes were depicted on the walls of the private tombs in Egypt from the Old Kingdom period (2575–2150 BC) through the Graeco-Roman times (332 BC–395 AD).

The ‘Study of the viticulture and oenology scenes in the Egyptian tombs’ scientific project (2011–2014) has documented and studied the viticulture and winemaking scenes in the Egyptian private tombs [14, 15].

For the first time, the scenes have been documented and studied together, including the texts associated to the images, and photographed. The scenes depicted on the walls of the tombs represent the main steps of the harvest and the wine production and are unique (see Fig. 1).

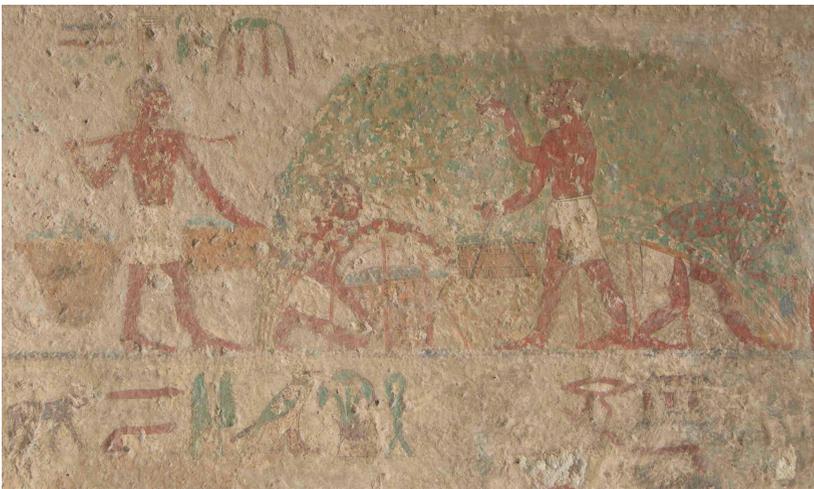


Fig. 1. Grape harvest scene from the tomb of Khnumhotep III (BH3) at Beni Hassan, Egypt. ©‘Irep en Kemet’ Project 2016

A bibliographical researchable database (Fig. 2) relevant to wine, viticulture and winemaking in the ancient Egypt has been completed, with 200 entries including articles, books, chapters in book, academic thesis, essays, abstracts, on-line articles and websites.

Furthermore, a scenes-detailed database with 92 records of tombs dated from the 4th Dynasty (2575–2450 BC) of the Old Kingdom until the 30th–31st Dynasties (380–332 BC) of the Late period has been developed [15].

SERIAL	0172
TYPE	Online Academic Thesis (PhD)
AUTHORS	M. R. Guasch-Jané
TITLE	Ei Vi a l'Antic Egipte: Estudi Cultural i Analític
WEBSITE	http://www.tdx.cat/
ONLINE LINK	http://www.tdx.cat/handle/10803/2431
PERIODICAL / JOURNAL / ENCYCLOPEDIA / DICTIONARY	
EDITION	
EDITORS	
PAGES	
PLATES / PLANS	
PUBLISHER	Universitat de Barcelona
PLACE OF PUBLICATION	Barcelona
YEAR OF PUBLICATION	2006
ABBREVIATION	Guasch, 2006
REMARKS	Rosa 03/08/2011 (added)

Fig. 2. Bibliographic database on the Ancient Egyptian wine. ©‘Irep en Kemet’ Project 2016

The database of the scenes of viticulture and winemaking in the ancient Egyptian private tombs (Fig. 3) includes for each scene: record number, scene description with the different steps according to the theme, that is, viticulture or winemaking.

In the viticulture scenes, the steps represented are: vinery, taking care of the vine, grape harvest and counting the baskets.

In the winemaking scenes, the steps represented are: transporting grapes to a press, pressing grapes, heating and filtering, pressing the remains in a sack press, filling wine jars, fermentation, offerings to goddess Renenutet, wine tasting, sealing the wine jars, labelling wine jars, counting wine jars, transporting wine jars to a cellar, refrigerate during fermentation, and store wine jars in a cellar.

The scene-detail database (Fig. 3) also includes: scene details, annotations, scene type and scene condition, text (inscriptions and translation) and image/photo. Moreover, the dating (period, dynasties and kings), location (provenance, governorate, archaeological site), provenance (governorate, archaeological site, tomb name and number, and location inside the tomb) and present location (if it is the same as provenance, if it’s a museum then location inside the museum and inventory number, and others if it’s not a museum) are detailed.

The project methodology included data collection analysis of the archives, compilation of documents and all the information associated with the Egyptian tombs having scenes of viticulture and winemaking, such as location, tomb owner names and titles, dating, among others [15].

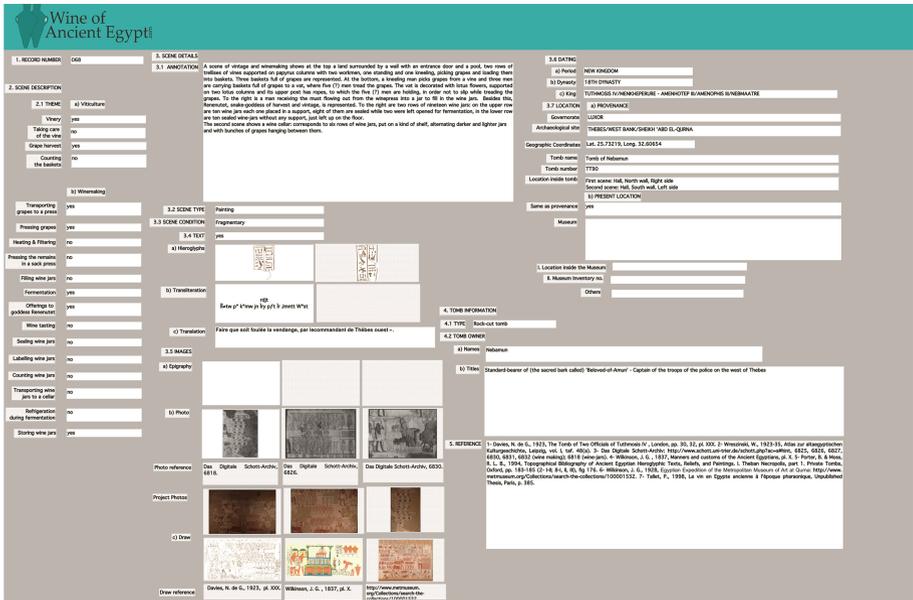


Fig. 3. Scenes-detailed database of the Ancient Egyptian tombs with viticulture and winemaking scenes. © ‘Irep en Kemet’ Project 2016

This comprehensive study of all scenes and associated texts, combined with a photographic survey in Egypt during 2013, have permitted to record and analyze all the scenes, including some unpublished ones.

The bibliographical research of the scenes of viticulture and winemaking has resulted in the identification of unpublished scenes. Furthermore, some of the scenes of viticulture and winemaking are not available for publication, because of copyrights or because they were never drawn or photographed. For this reason, and with permission of the Permanent Committee and Foreign Mission Affairs Department of the Supreme Council of Antiquities (SCA) of Egypt, we carried out a photographic survey for the tombs.

The 2013 photography mission to the Egyptian necropolises included the identified tombs to check the information obtained from historical documents and to take updated photographs of the scenes. The photographic mission allowed us to have access to almost all the tombs with scenes of viticulture and winemaking to study the images and associated text, and to identify unpublished data. It also permitted us to detect the current state of conservation of the already published scenes.

The photography mission work was divided into three phases, based on the geographic location (Upper Egypt, Middle Egypt and Lower Egypt) allowed taking detailed, high-resolution photos of the viticulture and winemaking scenes, which will be presented in the scenes-detailed database [15].

Furthermore, our successful photography mission also gave a great opportunity to explore the tombs, in which these scenes were depicted and learn about their contexts and current conditions.

This research study on the viticulture and winemaking scenes in the ancient Egyptian private tombs is an important tool for the future documentation and conservation of the archaeological heritage of Egypt.

4 Website “Irep En Kemet”, Wine of Ancient Egypt

The website ‘Irep en Kemet’ (=Wine of Ancient Egypt) project [www.wineofancientegypt.com] is being developed (Fig. 4) to transfer the knowledge and disseminate the results of our research on the subject of the wine culture from Ancient Egypt to the scientific and non-scientific community.

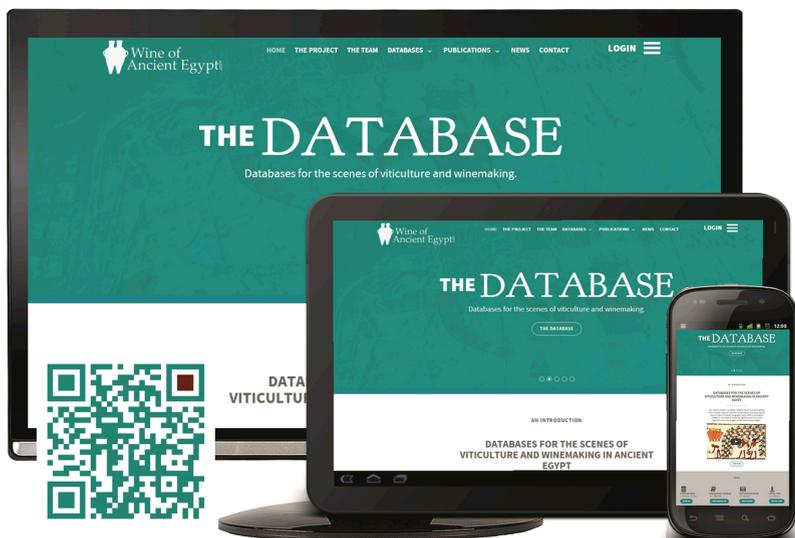


Fig. 4. The ‘Irep en Kemet’ (=Wine of Ancient Egypt) website on the study of the Ancient Egyptian wine culture. ©‘Irep en Kemet’ Project 2016

The creation of the website in 2013 was financially supported by the VINSEUM, *Museu de les Cultures del Vi de Catalunya*, in Vilafranca del Penedès (Barcelona, Catalonia) [www.vinseum.cat] and developed by *Sistemes de Gestió de Patrimoni* (SGP) [www.sgponline.net].

The website content includes the general information about the research on the viticulture and winemaking scenes and including: introduction, history, objectives and methodology, the team members, bibliography (Fig. 5), news (Fig. 6), links, collaborations and contacts.



Fig. 5. Published articles and congresses in the website. © 'Irep en Kemet' Project 2016

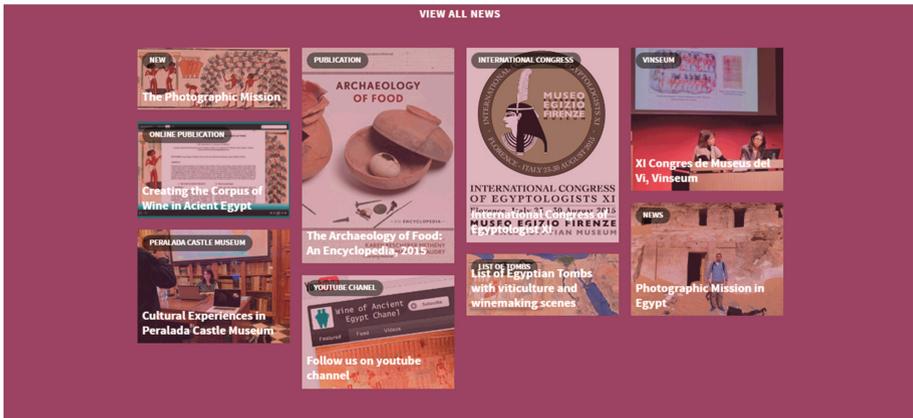


Fig. 6. Photographic mission, lectures, articles and congresses presented in the website news. © 'Irep en Kemet' Project 2016

In 2015 a second stage of the website, funded by Peralada Fine Estates in Peralada (Girona, Catalonia) [www.perelada.com/en], is developed to include the project results, the bibliography and scenes-detailed databases, and the interactive archaeological map of Egypt for the tombs with viticulture and winemaking scenes (Figs. 7 and 9).



Fig. 7. Archaeological map of Egypt with the tombs having viticulture and winemaking scenes on the 'Irep en Kemet' website. ©'Irep en Kemet' Project 2016

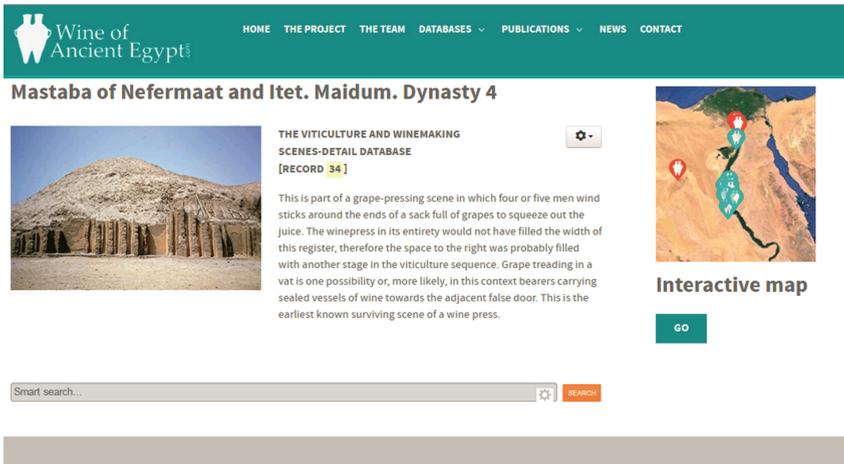


Fig. 8. Database of the tombs having viticulture and winemaking scenes presented in the website. ©'Irep en Kemet' Project 2016

Furthermore, the website includes our publications on the topic of wine in Ancient Egypt, freely accessible on-line.

The website will include all the collected data, studies and analysis. Currently, the on-line access to the scene-detail and bibliographic databases, and to the georeferenced tombs' map is being developed (Fig. 8).



Fig. 9. The viticulture and winemaking scenes presented in the website. ©‘Irep en Kemet’ Project 2016

Regarding the technical aspects, the website is multiplatform and available for consultation through mobile devices: tablets and 3G mobiles. The Qr codes have been generated to allow the consultation through these devices. The platform language is based on XML (eXtensive Markub Language). The web interface is designed using Content Management System (CMS) with open code, a free software under General Public Licence, allowing an intuitive navigation and actualization of the contents of the website.

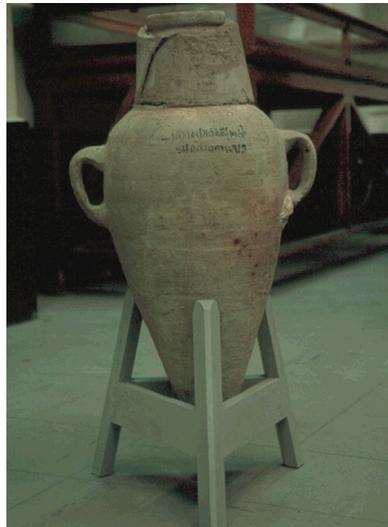


Fig. 10. Tutankhamun’s amphora *Journal d’Entrée* number 62303. ©Maria Rosa Guasch Jané, with permission of the Egyptian Museum in Cairo

The web platform gives visibility to our research on the Ancient Egyptian wine culture, an open access to the scenes-detailed and bibliography databases, which will be georeferenced, and the dissemination and socialization of the archaeological knowledge in relation to wine in antiquity as well as bibliography and multimedia material (images, audiovisual) and 3D reconstructions. The use of the Information and Communications Technology (ICT) will allow dissemination and on-line consultation.

5 Egywine Project

The Egywine project studies how the Egyptian wines were made to understand the ancient traditional elaboration methods for the knowledge advancement and heritage conservation.

Egywine is an interdisciplinary project that collects and documents evidences (pottery and organic material) for the entire process of grape cultivation and wine production in Egypt interrelating various scientific disciplines (archaeology, paleogenomics, history and semantics).

The EGYWINE project aims are to:

- Identify what is linked with wine from the Predynastic (3800–3300 BC) to the New Kingdom (1550–1069 BC) period;
- Study the Ancient Egyptian wine jars;
- Analyze ancient wine residues from pharaonic Egypt through paleogenomics.

5.1 Egyptian Wine Jars and Wine Inscriptions

Since the Predynastic Period (4000–3100 BC), wine jars were placed in the Egyptian tombs as funerary offerings. During the New Kingdom Period (1539–1075 BC), two-handled wine jars (amphora type) were inscribed in hieratic to indicate: the year, the name of the product, the quality, the provenance, the property (royal or private) and the name and title of the wine-maker (Fig. 10).

The inscription on the amphora *JE 62303* (Fig. 10) of the Cairo Egyptian Museum, from Tutankhamun's tomb (KV62) at Thebes, reads: "Year 4, wine from the Estate of Aten, in the Western River, chief vintner Nen" [12]. The clay seal of this amphora is broken and it is open on the upper part, as Fig. 10 shows. Like the labels in the modern wine bottles, the inscriptions on the New Kingdom wine jars give us information about the harvest and wine production [16] revealing that the ancient Egyptians considered this information relevant and necessary to be able to distinguish between wines. It was extremely important to know the vintage and the provenance of the product.

The method of wine production and preservation of the ancient Egyptian wines, and the diffusion of the Egyptian wine culture legacy to Europe is investigated through the analysis of the pottery and the wine inscriptions.

5.2 Paleogenomic Analysis

The paleogenomic analysis aim to identify possible relations with current grape varieties, wine yeasts, and grape vine origins.

Egywine project offer multiple perspectives of study: (i) vine genome evolution since its initial domestication; (ii) fermentation yeasts evolution; (iii) wine making process evolution, through a metagenomic analysis of the multiple microorganisms used during, or along, the wine making process.

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