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FIVE ARTICLES ABOUT DRUGS,  
MEDICINE, & ALCOHOL FROM

***The Ancient  
Near East Today***

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## Chapter One

# An Affair of Herbal Medicine? The 'Special' Kitchen in the Royal Palace of Ebla

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## An Affair of Herbal Medicine? The ‘Special’ Kitchen in the Royal Palace of Ebla

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By Agnese Vacca, Luca Peyronel, and Claudia Wachter-Sarkady

In antiquity, like today, humans needed a wide range of medicines, but until recently there has been little direct archaeological evidence for producing medicines. That evidence, however, also suggests that Near Eastern palaces may have been in the pharmaceutical business.

Most of the medical treatments documented in Ancient Near Eastern cuneiform texts dating to the 3rd-1st millennium BCE consisted of herbal remedies, but correlating ancient names with plant species remains very difficult. Medical texts describe ingredients and recipes to treat specific symptoms and to produce desired effects, such as emetics, purgatives, and expectorants. Plants were cooked, dried or crushed and mixed with carriers such as water, wine, beer, honey or milk —also to make them tastier. Indeed, plants used in medicine were often toxic or unpalatable and were not consumed as food. For several plant species it appears difficult to ascertain whether



Medical text (TM.75.G.1623) from Royal Palace G. All figures courtesy of the Missione Archeologica Italiana in Siria (MAIS) unless otherwise noted.

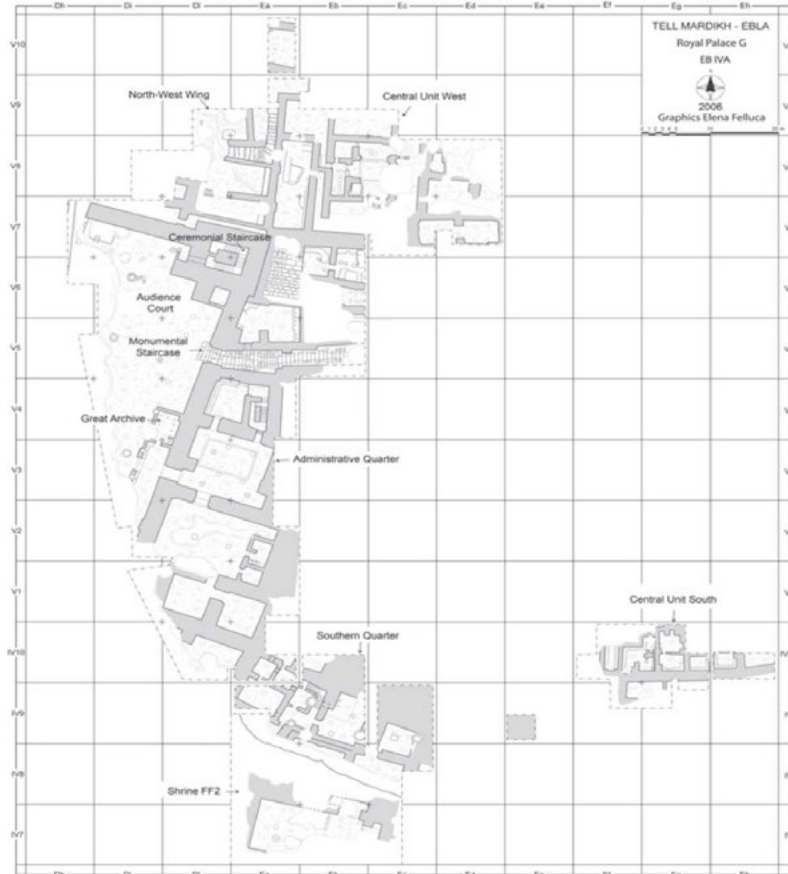
they were used as pharmacological remedies, psychoactive substances, or both. For some specific diseases (such as impotence) both therapeutic and magical treatments are documented, and in most cases a clear distinction between the two cannot be made.

## Ebla and Its Royal Palace

Very few archaeological contexts excavated in the Ancient Near East have revealed clear evidence of medical plants remains and associated processing installations. The oldest is from Ebla, the capital of an important kingdom during the late Early Bronze Age (c. 2450-2300 BCE). Its political and economic relations with other regional



Aerial view of Ebla



Plan of Ebla Palace G.

centers of Syria and Mesopotamia (such as Mari, Kish and Nagar), and its administration have been reconstructed thanks to the discovery of thousands of cuneiform documents from the State Archives. The excavations carried out by the Italian Archaeological Expedition, headed since 1964 by Paolo Matthiae of Sapienza University of Rome, revealed a large palatial complex (Royal Palace G), so far excavated over 4.500 square meters.

Palace G, like other Early Bronze Age palaces in Syria and Mesopotamia, had units devoted





Palace G. Rooms with working installations and grinding facilities in the West Unit of the Central Complex.

to different functions, including for storing primary products and preparing food, as well as administrative and residential sectors. In the Royal Palace of Ebla, beside the Administrative Quarter (with the cuneiform archives and the 'treasury'), sectors devoted to primary products were brought to light. Several specialized rooms were equipped with benches, basalt

slabs, and installations for pressing olives and milling cereals. Moreover, hundreds of vessels, including cooking pots, storage jars and tablewares were found in their original position at the time of the final destruction of the palace (around 2300 BCE).

The great quantities of food resources collected by the central administration were processed to prepare meals for the royal family and the royal court, or to be redistributed as food rations and wages for the palace's employees. Cuneiform texts from the royal archives which mention squads of flour female millers (named 'dam kikken') under the



Palace G. Rooms with working installations and grinding facilities in the West Unit of the Central Complex.



Crushed storage jar from Palace G. (bottom).



Table ware from Palace G.

control of overseers, allow us to imagine these workspaces occupied by dozens of squatting women grinding cereals.

But a completely different picture emerges from one of the palace's rooms, located in a very peculiar position, at the bottom of the Monumental Stairway in close proximity to the Court of Audience. The room was equipped with at least eight fireplaces, and several cooking pots were found in place over the hearths, and smashed above the floor. Analysis of the jars' contents, and botanical remains scattered all over the room, show that the majority of species processed in the kitchen were wild herbs.

### **The Special 'Kitchen' of Royal Palace G (room L.2890)**

If this room had been a "normal kitchen" we would expect large quantities of food plants, and faunal remains. But only small amounts of food plants (21.6%) and almost no animal bones were collected, whereas a large amount of non-food species (78.4%), such as spurge, was identified in this room.

The discovery of a great quantity of spurge (Euphorbiaceae), together with other wild





Royal Palace G. The entrance to the Kitchen L.2890 from the Monumental Stairway.



Royal Palace G. The entrance to the Kitchen L.2890 from the Monumental Stairway.

plant remains such as calendula, chamomile, poppy, cleavers, hawthorn, heliotrope in the 'kitchen" of Royal Palace G at Ebla, presents an exceptional case study.

The discovery of seeds and stems of wild herbs show that various parts of plants were used including flowers, leaves and roots. Dark burnt, solid incrustations, thin in section, and with a melted and glossy appearance (sometimes with bubbles), have been found inside the jars and at the bottom of the hearts. These incrustations are residues from different processes such as resin extraction (Euphorbia, in particular, exudes a milky resinous latex), or boiling plants in water, with the addition of olive oil or honey, in order to prepare medicinal drinks, infusions, or anointments.

Resin extraction could be obtained with a simple melting process: the latex of Euphorbia, which is water-soluble, is heated in water and the insoluble resin melts





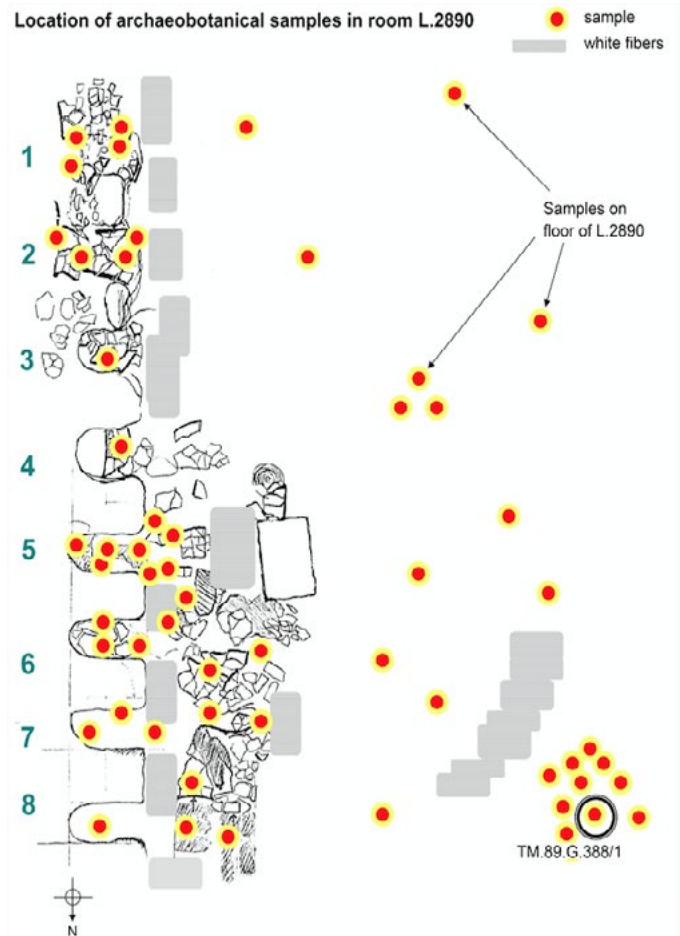
Euphorbiaceae (spurge family). Diameter = 1.5–1.8mm.

and rises to the surface to be skimmed off. The rest collects at the bottom of the vessel. After separation the resin hardens when exposed to air. Dried latex (Euphorbium) is still used as a drug in African countries, and extracts of Euphorbiaceae, which have anti-inflammatory, analgesic, antioxidant and antimicrobial properties, are used today in alternative medicine in Europe. Overall, the

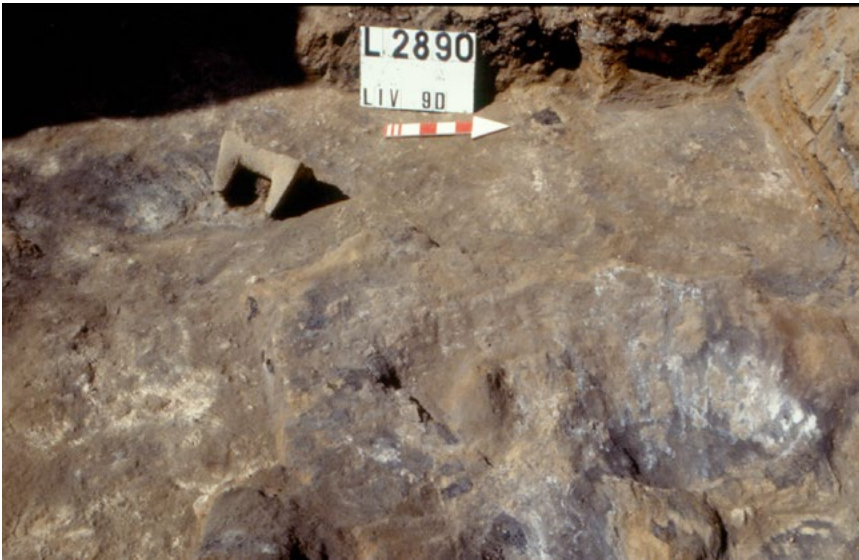
wild species found in the kitchen grow naturally in semi-arid zones, where important families of medicinal plants are documented.



Royal Palace G. Kitchen L.2890 with the location of botanical samples.



Royal Palace G. Kitchen L.2890 with the location of botanical samples.



Royal Palace G. Room L.2890 with vegetable fibers found on the floor in front of hearths.



Royal Palace G. Room L.2890 with vegetable fibers found on the floor in front of hearths.

The quantity of products that could have been processed within the kitchen, using all eight hearths, and pots having a capacity from 40 to 70 liters, is remarkable. The combined presence of wild plants with medicinal or stimulant properties, the fire installations, the high number of vessels, and the very location of the kitchen, underlines the uniqueness of this room.

### **Processing and Consuming Plants: Medicinal or Other Uses?**

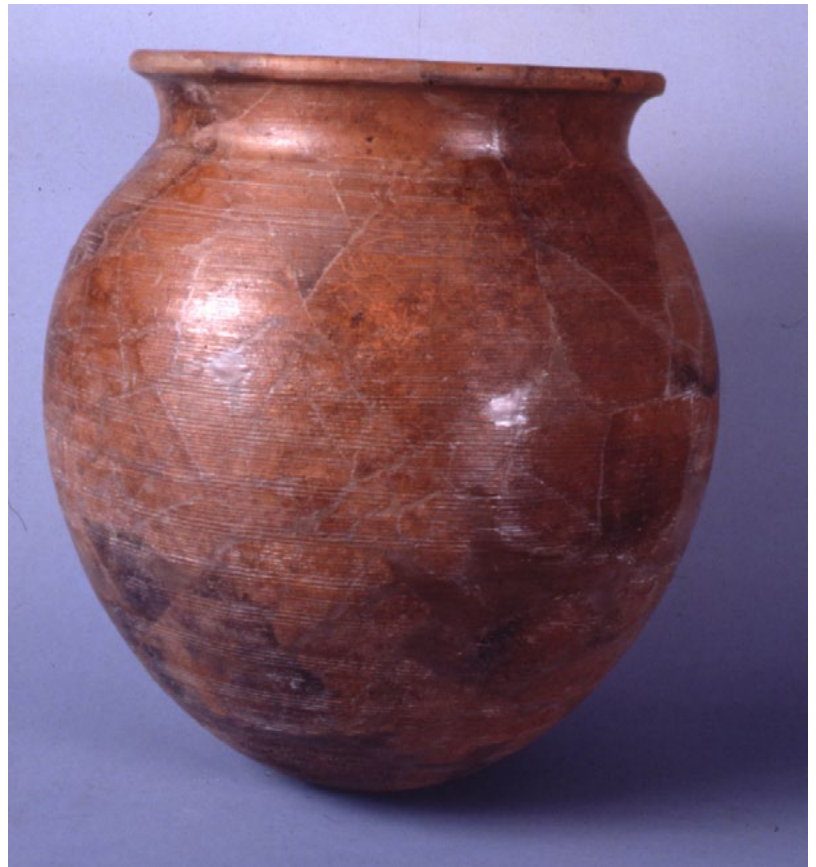
Unfortunately we do not have clear references to the use of stimulants in texts from Ebla, although some ceremonies imply ritual consumption of foods and beverages during convivial occasions. The

proximity of the kitchen to the official sector of the palace suggests that it was used to prepare beverages for special occasions in relation with reception and ceremonial activities. We have also suggested that some plants attested in the 'kitchen' have psychoactive properties and were used for the extraction of resins and preparation of beverages.

On the other hand, the processing of vegetal substances to prepare medical remedies is equally plausible, and well attested in ancient pharmaceutical texts. An extraordinary tablet from Palace G quotes several medicinal plants used for gastrointestinal, dermatological, and gall bladder diseases, and notes their exact doses and the



therapy. Although the correlation of plant species and ancient plant names remains a difficult task, it has been recently suggested that the eblaic term *gišne-gi-ba-tum* may be interpreted as *euphorbia*. The term recurs in a cuneiform document mentioning the purchase of the medicinal plant by a man from the Royal entourage in exchange for a large amount of wool. Besides Euphorbiaceae some 34 other different taxa with medicinal properties were found, though in lower numbers. The beverages produced in “kitchen” L.2890 may have been used as pharmacological remedies for members of the royal court.



Royal Palace G. Room L.2890 with vegetable fibers found on the floor in front of hearths.

In addition to difficulty in ascertaining whether the beverages produced in the kitchen were used as pharmacological remedies or stimulants, there was no clear separation



Royal Palace G. Kitchen hearths.

between medical and magical spheres in the Ancient Near East. Medical texts can prescribe both medical (*asûtu*) and magical treatments (*āšipûtu*), fulfilled by physicians (*asum*) and exorcists (*masmassum* or *wāšipum*). It is nevertheless interesting to speculate about the role of the palace, which was probably in the business of purchase and



processing large quantities of herbs (a sort of 'big pharma?'), expanding our notion of 3rd millennium BCE institutions.

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## Chapter Two

# Potent Potables of the Past: Beer and Brewing in Mesopotamia

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## Potent Potables of the Past: Beer and Brewing in Mesopotamia

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By **Tate Paulette** and **Michael Fisher**

In ancient Mesopotamia, people knew how to appreciate a good beer. They appreciated their beer often and often in large quantities. They sang songs and wrote poetry about beer. Sometimes they got drunk and threw caution to the wind.

Beer was a gift from the gods, a marker of civilization, a dietary staple, a social lubricant, and a ritual necessity. It was produced on a massive scale and was consumed on a daily basis by people across the socio-economic spectrum. It was indeed “liquid bread,” a fundamental source of sustenance. But what gave beer its distinctive power and appeal was its inebriating effects.

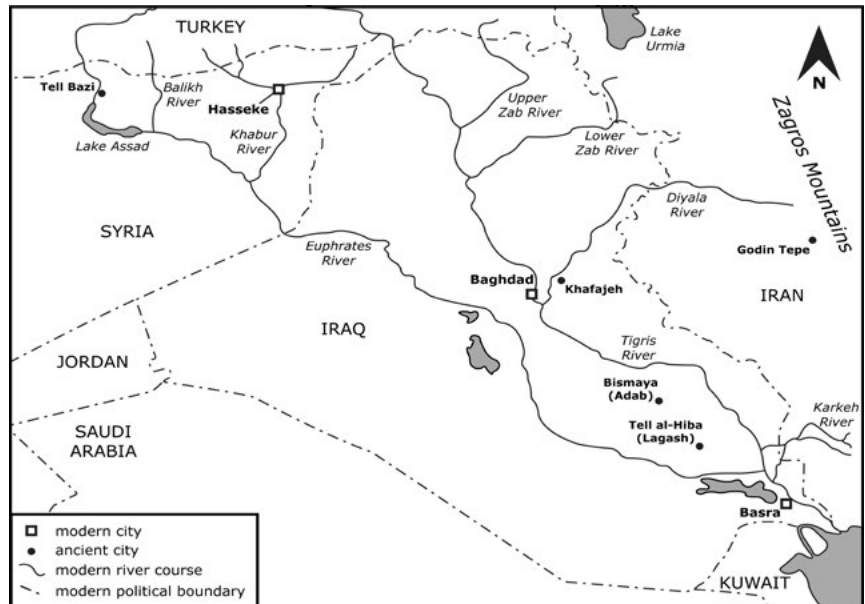


Cylinder seal (left) and modern rolling (right) showing the consumption of beer through long, reed straws. Early Dynastic period (c. 2600–2350 BCE). Khafajeh, Iraq. (Courtesy of the Oriental Institute of the University of Chicago)



## Beer in Mesopotamia

The earliest solid evidence for beer in Mesopotamia dates to the later part of the fourth millennium BCE (the Uruk period). Our first glimpses of Mesopotamian beer, therefore, appear during the period of rapid and radical change that produced the world's first cities and states and the world's first writing. Indeed, in the earliest “proto-cuneiform” documents, beer was already being produced and distributed in large quantities.



Map of Mesopotamia showing sites mentioned in the text. (Base map courtesy of the Oriental Institute of the University of Chicago)

Excavations at the Uruk-period site of Godin Tepe in western Iran have also uncovered traces of calcium oxalate or “beerstone” within ceramic vessels. As things currently stand, though, we know next to nothing about the prehistory of beer in the region, that is, about the origins and development of beer during preceding periods. Given the scale and sophistication of brewing activity during the Uruk period, we can expect that future work will push beer’s backstory thousands of years further into the past.

## Brewing beer in Mesopotamia

What exactly was Mesopotamian beer? Known as *kaš* in Sumerian or *šikaru* in Akkadian, it was a barley-based fermented beverage, typically brewed using two key ingredients: malted barley and a special kind of barley bread (or a looser barley product) called *bappir*. Many beers also included emmer wheat, date syrup, and other flavorings, but there is no evidence for the use of hops. Although the beers were sometimes referred to as “filtered” or “strained,” most probably included a significant amount of solid matter. Cuneiform documents refer to a number of different types of beer. In the earliest documents (c. 3000 BCE), nine different types are mentioned but are difficult to translate. During the Early Dynastic period (c. 2500 BCE), at least five

types were recognized: golden, dark, sweet dark, red, and strained. By the Ur III period (c. 2100 BCE), beer was being categorized primarily in terms of its quality or strength: ordinary, good, and very good – or, perhaps, ordinary, strong, and very strong.

Beer appears on thousands of cuneiform tablets, most produced by scribes working for powerful palace and temple institutions. Most of these tablets are economic documents, including delivery orders, receipts, monthly accounts, production estimates, and ration lists.

Through the eyes of the institutional administrator, however, brewing was a black box. The details of the process mattered little, as long as inputs and outputs could be measured, monitored, and recorded. Only rarely do administrative texts have anything explicit to say about how the beer was actually made. They do, however, provide invaluable information about brewing ingredients, the organization of production, and the distribution of beer to consumers. The best description of the brewing process itself can be found in a literary document, the famous Hymn to Ninkasi, goddess of beer. Although it is definitely not a set of instructions for the brewing of beer, this poem or song appears to include a step-by-step, if enigmatic, description of the brewing process.

Archaeologists have uncovered few physical traces of large-scale, institutional breweries in Mesopotamia. The best candidate is a building excavated



Cuneiform tablets recording the disbursement of beer. Akkadian period (c. 2350–2150 BCE). Bismaya, Iraq. (Courtesy of the Oriental Institute of the University of Chicago)



Experimental brewing of Mesopotamian beer using replica ceramic vessels. Oriental Institute of the University of Chicago and Great Lakes Brewing Co.

at the site of Tell al-Hiba (ancient Lagash) in southern Iraq, dating to the Early Dynastic III period (c. 2600–2350 BCE). This building included a variety of vats, fireplaces, and ovens and, fortuitously, a cuneiform tablet that mentions the é-lunga (Sumerian for “brewery”). Thanks to scattered references in the written record, we know that beer was also brewed on the household level, and recent excavations at Tell Bazi in north-central Syria have provided vivid confirmation. Among approximately 50 houses excavated at the site, dating to the Late Bronze Age (c. 1400–1200 BCE), many included a standardized set of brewing vessels containing residue evidence for beer. The excavators argue that nearly every household was producing its own beer or, in some cases, wine.



Tasting “Enkibru” at Great Lakes Brewing Co. in Cleveland, Ohio.  
(Photo: Kathryn Grossman)

There have been a number of efforts to recreate Mesopotamian beer. In the late 1980s, for example, the University of Chicago’s Oriental Institute teamed up with Anchor Brewing Company to brew a beer called “Ninkasi,” inspired by the Hymn to Ninkasi but brewed using modern equipment. More recently, the excavators of Tell Bazi have used replica ceramic vessels to recreate the beers once brewed at the site. Since 2012, we have also





Stone plaque with a banquet scene (top register) showing seated individuals drinking a beverage from cups. Early Dynastic period (c. 2600–2350 BCE). Khafajeh, Iraq. (Courtesy of the Oriental Institute of the University of Chicago)

been involved in a collaborative brewing effort, joining the Oriental Institute of the University of Chicago with Great Lakes Brewing Company in Cleveland, Ohio. Drawing on written and archaeological evidence, we have done our best to employ authentic ingredients, equipment, and techniques – resulting in a beer that we call “Enkibru,” always tasted alongside “Gilgamash,” a companion beer brewed with the same ingredients but modern brewing equipment.

## Drinking beer in Mesopotamia

Beer was consumed in a wide variety of contexts in Mesopotamia

– at feasts, festivals, and ritual ceremonies, for example, but also at home, on the job, and in neighborhood taverns. It was often consumed from a communal vessel through long, reed straws, as shown in numerous artistic depictions; another common image shows a woman drinking beer from a vessel through a straw during sex. The ubiquitous “banquet scenes” that show seated individuals drinking from cups also suggest that beer (or, alternatively, wine) may sometimes have been consumed from cups.

What kind of effects did beer produce? There is significant disagreement about the alcohol content of Mesopotamian beer. Some argue that this “beer” was not really beer at all but a low alcohol (or alcohol-free) barley beverage analogous to modern kvass, a fermented drink made from rye bread. While it is possible that the Sumerian and Akkadian terms that we translate as “beer” encompassed a broader semantic range than our own term, we see no reason to ignore the fact that in Mesopotamian literature the consumption of beer often led to intoxication. Beer made people happy; it lightened their mood; it muddled their senses; and sometimes it made them angry and

belligerent.

As in many (perhaps most) other societies, both past and present, beer occupied an ambiguous position in the Mesopotamian social world. It was consumed and enjoyed by many people on a regular basis, but there was also a fine line between enjoyment and overindulgence, between acceptable and unacceptable levels of inebriation. The tavern,

in particular, provided a distinct space within which this line (and others) could be crossed. The very existence of this conflicted stance toward beer and its potential effects provides some indication of the power of beer and its unique capacity to transform individual people, groups of people, places, and occasions. Over the past few decades, numerous studies have highlighted this dynamic dimension of alcoholic beverages, placing them at the center of social, political, and economic life in societies widely separated in space and time. It is time to follow suit and give beer its proper place in ancient Mesopotamia – treating it as an active and potentially transformative force, whose potency was fundamentally grounded in its inebriating effects.



Tasting “Enkibru” at Great Lakes Brewing Co. in Cleveland, Ohio.  
(Photo: Kathryn Grossman)

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## Chapter Three

# ‘Joy plants’ and the Earliest Toasts in the Ancient Near East



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## ‘Joy plants’ and the Earliest Toasts in the Ancient Near East

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By Elisa Guerra Doce

Inebriation is a cross-cultural habit whose origins can be traced back to Prehistory. But humans are not the only species fond of the mind-altering effects of certain plants and drinks. Some animals are also attracted to overripe fruits and psychoactive plants. Orangutans, chimpanzees and other primates, elephants, and even birds, have been reported to over-indulge on fermented fruits. The image of an intoxicated moose in Sweden went viral in 2011, when the animal literally got stuck in an apple tree trying to eat more fermented fruits.

In their search for food early humans are likely to have come across plants and mushrooms with peculiar effects. The use of psychoactive plants, many of which are consumed raw, predates the consumption of fermented beverages. As yet there is no direct evidence of these practices during the Palaeolithic. The presence of ephedra, a natural stimulant, in a Neanderthal grave, ca. 60,000 BCE, in Shanidar Cave, northern Iraq, has been considered some of the earliest evidence for the use of mood-altering plants in the Old World. But since this Middle Palaeolithic burial cave has been disturbed in modern times by rodent activity this interpretation is debatable. There is also no direct evidence for the production of fermented beverages during the Neolithic before the invention of pottery,



A drunken moose after eating fermenting apples in Saro, Sweden (CNN).



The Shanidar IV 'Flower Burial' (Smithsonian Institution).

although the technological and technical prerequisites of brewing were well established during the Natufian of the Near East (ca. 12,500-9,500 BCE).

From the Neolithic onwards, however, there is no doubt regarding the consumption of psychoactive plants and alcoholic beverages. The domestication of the opium

poppy probably started during the sixth millennium BCE in the Western Mediterranean, spreading from there to the rest of the Old World. Apart from its oily seeds, the exploitation of its narcotic properties cannot be ruled out. The earliest written records suggesting the use the opium poppy date back to the third millennium BCE; Sumerians appear to have referred to it as Hul Gil, the 'joy plant', but this claim is still a matter of debate. But by the second millennium BC, there is considerable information evidence for the cultivation of the opium poppy and its ritual use in the Eastern Mediterranean.

Among the most interesting examples of religious scenes from the Late Bronze Age Eastern Mediterranean (ca. 1600-1100 BCE) that include this plant species are a golden signet ring found by Heinrich Schliemann in the acropolis of Mycenae, and the so-called Poppy Goddess figurine from the Minoan sanctuary at Gazi.



Gold signet ring from the Acropolis treasure of Mycenae. Grave Circle A. (National Archaeological Museum of Athens).

Some scholars believe





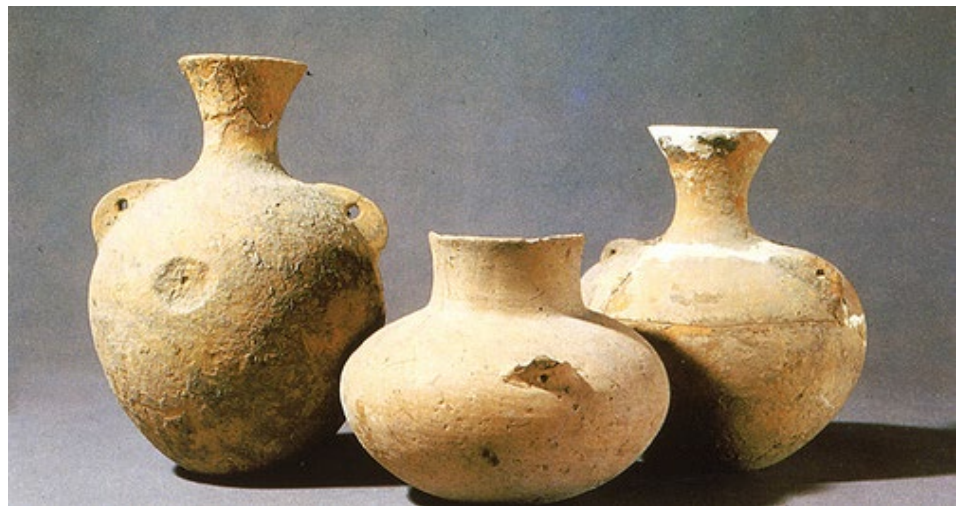
The Minoan Poppy Goddess from Gazi (Archaeological Museum of Heraklion).

Sumerian and Assyrian tablets mention other psychoactive plants, including deadly nightshade, mandrake, and hemp. In contrast, Egyptian papyri contain uncontested evidence of the use of different psychoactive plant species from the middle of the second millennium BCE onward. Similar plant descriptions are included in the Bible, and this has given rise to the still controversial hypothesis that ancient Israelite religion was associated with the use of mind-altering plants in sacramental contexts. Nonetheless, there is direct evidence for the medicinal use of Cannabis in Roman times, as indicated by the presence of charred seeds in the tomb of a 14-year-old girl excavated in Beit Shemesh, near Jerusalem, dating to the fourth century AD, probably used as an aide to childbirth.

Direct evidence of alcoholic drinks in the past is based on the identification of residues in the inner walls of archaeological vessels. Traces

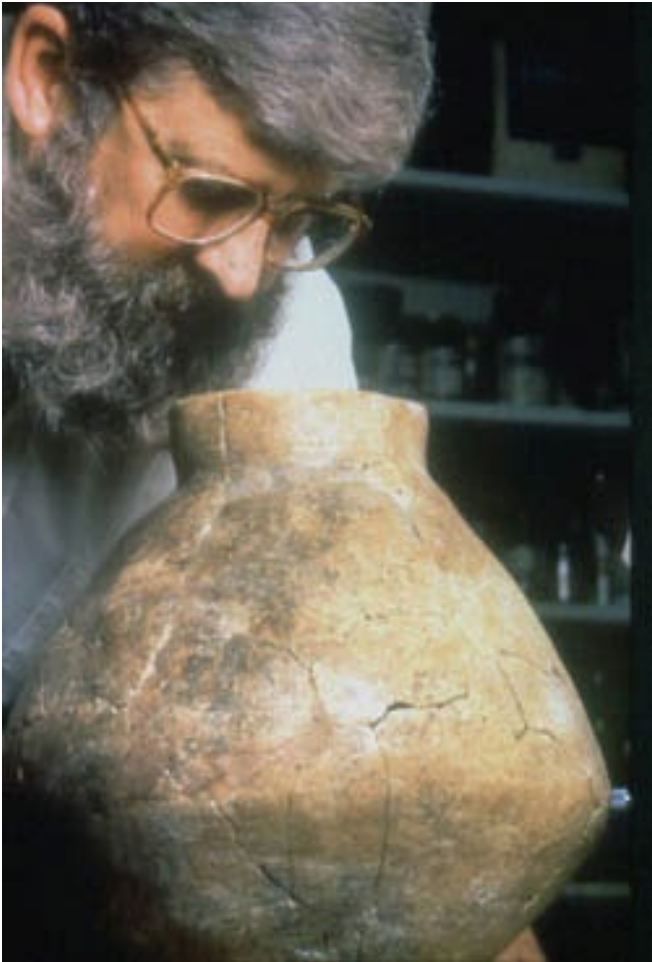
of the original contents of ancient pottery, invisible to the naked eye, may have been absorbed within the porous ceramic matrix of the vessels and may be detected and

chemically identified. To date the earliest chemically confirmed alcoholic drink in the world was found at the Early Neolithic village of Jiahu, in the Yellow River Valley of China (Henan Province), ca. 7000–6600 BCE. Residues adhering to potsherds point to a mixed fermented beverage of wild grapes or hawthorn



Early Neolithic jars from Jiahu (Henan province, China) containing a mixed fermented beverage of rice, honey, and fruit (hawthorn fruit and/or grape) (Pennsylvania Museum in Philadelphia).





Patrick McGovern, scientific director of the Biomolecular Archaeology Laboratory at the University of Pennsylvania Museum, after discovering the residues in the pots from Hajji Firuz Tepe (Pennsylvania Museum in Philadelphia).

fruit (*Crataegus* sp.), rice (possibly a domesticated variety), and honey.

Similarly, wine may have been produced from wild grapes in the Caucasus region during the Neolithic, as suggested by the identification of tartaric acid in pottery jars of that period. Analyses of two ceramic vessels, found at the site of Hajji Firuz Tepe in the Zagros Mountains of north-western Iran, ca. 5400–5000 BCE, showed that they had contained a resinated wine with terebinth tree or pine resin added as a preservative and medicinal agent.

It has been argued that the wild Eurasian grapevine was domesticated somewhere in the arc of mountains extending from the eastern Taurus across Transcaucasia to the northwestern Zagros, since many archaeological sites from this region have provided grape seeds corresponding to the domesticated variety (*Vitis vinifera* L. subsp. *vinifera*). It should be noted that according to

the Bible, Noah allegedly planted the first vineyard on Mount Ararat, located in eastern Turkey.

Not long after the domestication of grapes, wine was produced in large quantities in specialized facilities, such as the cave complex of Areni 1, a Chalcolithic site in south-east Armenia, dated to around 4000 BCE. Excavations have unearthed a fully equipped winery consisting of basins that could have served as wine presses where grapes were trodden, and also fermentation vats, storage jars, drinking bowls, and remains of domesticated grapes. Researchers working at the site believe that wine may have been made for mortuary practices, since 20 burials were found next to the winemaking facilities and drinking cups have been found inside and around the graves. The consumption of alcohol in ancient civilizations of the Near East is well attested



Grape pressing installation in the cave complex Areni 1, Armenia (Antiquity Journal).



Modern impression of a Sumerian cylinder seal from the Early Dynastic III period (ca. 2600-2350 BC): Banquet scene with seated figures drinking from a large vessel using long stalks (The Metropolitan Museum of Art).

to from the fourth millennium BCE through iconographic representations of drinking scenes, archaeochemical analyses of pottery sherds, and later on also through texts dating from the second millennium BCE (such as The Epic of Gilgamesh, The Hymn to Ninkasi, the Sumerian goddess of brewing and beer, the Egyptian Book of the



Modern impression of a Sumerian cylinder seal from the Early Dynastic III period (ca. 2600-2350 BC): Banquet scene with seated figures drinking from a large vessel using long stalks (The Metropolitan Museum of Art).

Dead, and others). Beer and wine were produced on a large scale, traded along the Mediterranean (as revealed by residue analyses on some amphoras from the Late Bronze Age Uluburun shipwreck), and their consumption was quickly associated with ritual ceremonies.

Beer, weed, wine, opium? It seems that ancient inhabitants of the Near East had a rock and roll lifestyle! Actually, it was quite the contrary, the consumption of psychoactive substances in the ancient Near East differed dramatically from that image. Our predecessors managed to make their use beneficial to society by integrating drug plants and alcohol into social, religious, and medicinal practices. The mind-altering effects of these agents were interpreted as part of a religious experience. Not surprisingly, then, wine had a significant role in Judaism and came to symbolize the blood of Christ for Christians.

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## Chapter Four

# Psychedelics and the Ancient Near East

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## Psychedelics and the Ancient Near East

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By **Diana L. Stein**

As courts today debate whether to legalize or regulate the use of drugs like cannabis, it is interesting to look at the history of man's relationship with mind-altering substances. Several books, exhibits, and catalogues have recently explored the topic. Yet, despite the consensus that "every society on earth is a high society," the ancient Near East is omitted from these surveys. Is it too remote? Do we know so little? Was it unique? The evidence suggests otherwise.

Like other traditional societies, early villagers in the ancient Near East were familiar with the qualities and effects of their native herbs. Charred plant remains at the early Neolithic site of Tell Abu Hureyra in Syria (tenth mill. BCE) make it clear that the inhabitants used a deliberate selection of local plants. Some were highly toxic in their natural state and had to be roasted to become edible, while others were only useful for dyes or medicines. Such intimate knowledge of the natural world accumulated over the following millennia and became part of the traditional folklore on which ancient Near Eastern medicine, like so many others, is based.



Wall painting by the Tukano Indians of the Colombian Amazon (Jay 2010: 18, courtesy Stephen Hugh-Jones).

The earliest known medical recipes come from the third

millennium BCE city of Ebla in Syria. But late second and first millennia BCE Mesopotamia is our main source of textual information on what plants were known, which parts were used, how they were processed, mixed and applied, and what purpose they served. We learn that the majority of drugs were plant-based, derived from extracts, resins, or spices. Plant roots, stems, leaves, seeds, blossoms, and fruits were used dry or fresh, ground and sifted, soaked and boiled, or smoked.

To render certain drugs more palatable or to enhance their effect, they were often mixed with wine, beer, vinegar, milk, honey, and tallow. The resulting concoctions were applied as salves, ingested as potions, powders, and pills, or inhaled as fumes in order to treat all manner of ailments, both real and imagined. Certain drugs were prescribed for their mind-altering effects. Some of these brought about sedation, anesthesia, or analgesia. Others were administered in order to relieve or overcome inhibition, fear, panic, and depression as well as, in the odd instance, to induce hallucinations.

### Which mind-altering drugs were used in the ANE?

Despite the many references, most of the botanical names are still unidentified. Our best clues regarding psychotropic plants come from actual botanical remains: liquid residues, carbonized seeds, pollen, fibers, and fiber impressions. Various hallucinogenic plants have now been identified in and around the ancient Near East. Traces of a liquid extract from the Blue Water Lily



Munbaqa (Syria): Wall painting (red and black) in non-domestic building dated EBA IVA = Akkadian period. Machule, D. et al. "Ausgrabungen in Tall Munbaqa 1984," MDOG 118 (1986) pp. 79, 85ff, Abb. 10.





Uruk seal impression from Ur (ca. 3000 BCE). D. Collon, *First Impressions* (London: British Museum Press, 1987) no. 661.

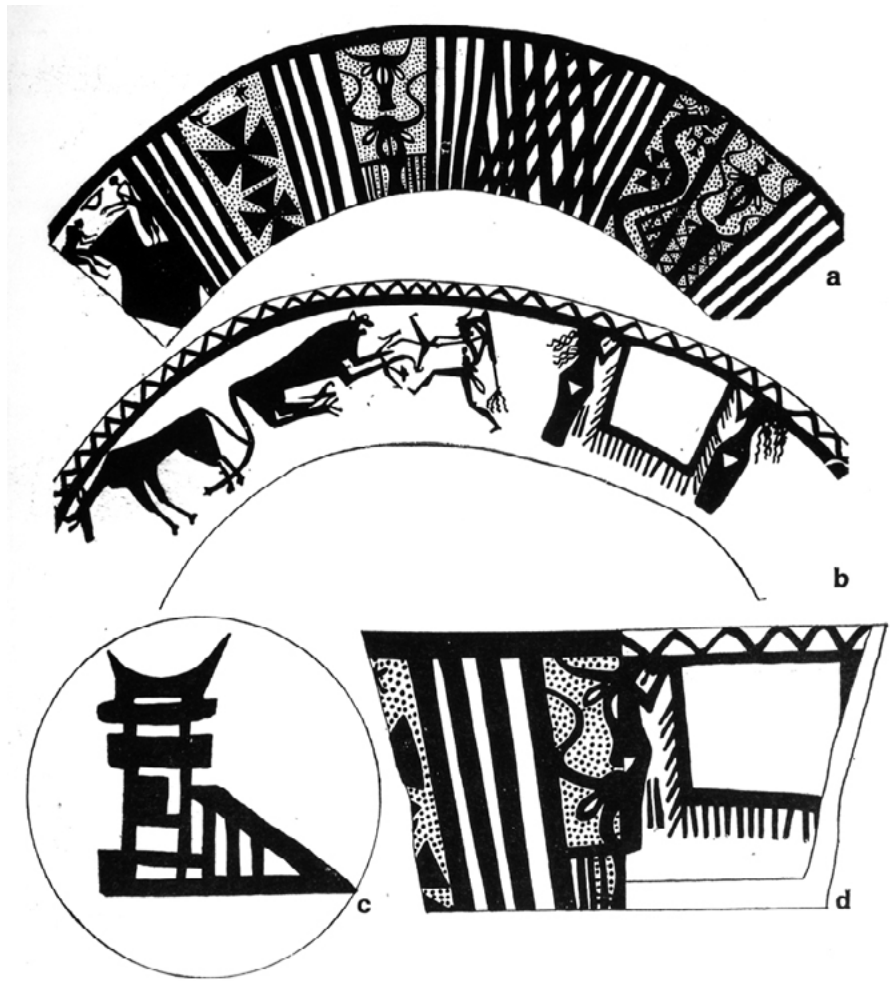
(*Nymphaea caerulea*), a potent narcotic plant, were discovered in alabaster jars stored in the Annex of Tutankamun's fourteenth-century BCE tomb in Egypt. In the courtyard of a Late Bronze Age temple at Kamid el-Loz in Lebanon stood a storage jar containing 10 liters of Viper's Bugloss (*Echium Linné*), another potent hallucinogen. There are strong indications that Cyprus was the source of opium (*Papaver somniferum*), which was exported around the Eastern Mediterranean during the Bronze Age in characteristic Base-Ring I juglets shaped like poppy seed capsules.

Still more widespread is evidence for hemp (*Cannabis sativa*). The oldest example of this multipurpose plant now comes from Çatal Hüyük, a Neolithic site in Turkey, where a hemp-woven fabric was recently found wrapped around a skeleton below a burnt building dated ca. 7000 BCE. Already at this time hemp is thought to have been an important trade item. Elsewhere in Central Asia, Caucasia, and the Eurasian steppe, evidence for hemp extends from late Neolithic to Scythian times and exists in the form of rope, thread, hemp-impressed pottery, and actual hemp seeds. Some of the hemp-impressed ware served as braziers that were found in graves, and the seeds were likewise associated with braziers and burials.

### **What purpose did they serve?**

All of these psychotropic plants have medicinal properties and would have been used in treating physical or psychological conditions. The residue of burnt cannabis,

discovered within the abdomen of a young girl who died during childbirth and was buried in a fourth century BCE tomb near Jerusalem, supports this. However, the context of the botanical remains also point to other uses. The Blue Water Lily extract and the burnt hemp seeds were both associated with death and burial rites, and the seeds of Viper's Bugloss had some connection with ritual practice inside the temple. Within these contexts, psychotropic plants probably served as aides to trance techniques (e.g., dancing, chanting, extreme asceticism, and mortification of the flesh), and as such they are likely to have been considered sacred.

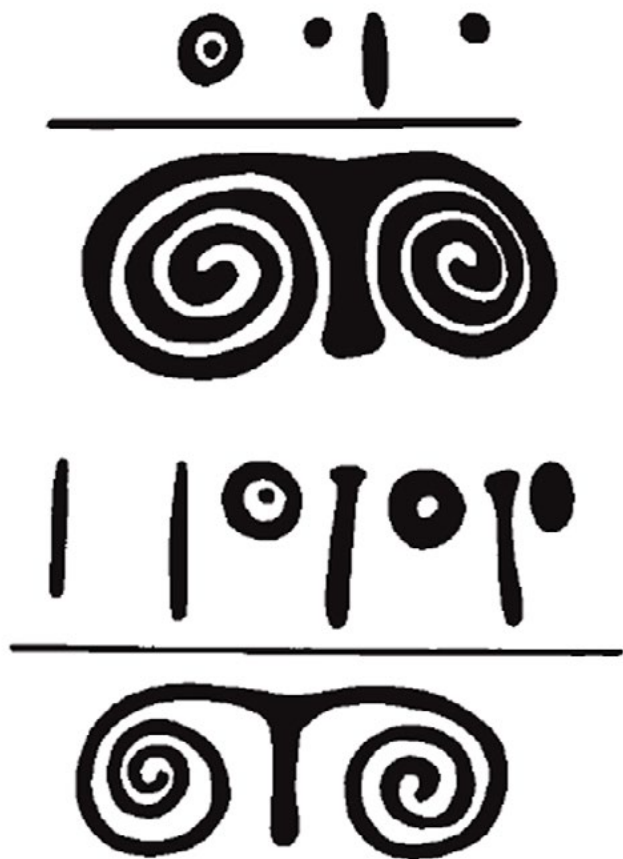


Arpachiyah (Iraq). Halaf bowl from ritual burial G2, tholos area (late 6th mill. BCE): (a) exterior (b) interior (c) base. I. Hijara, "Three New Graves at Arpachiyah," *World Archaeology* 10/2 (1978) 125-128,

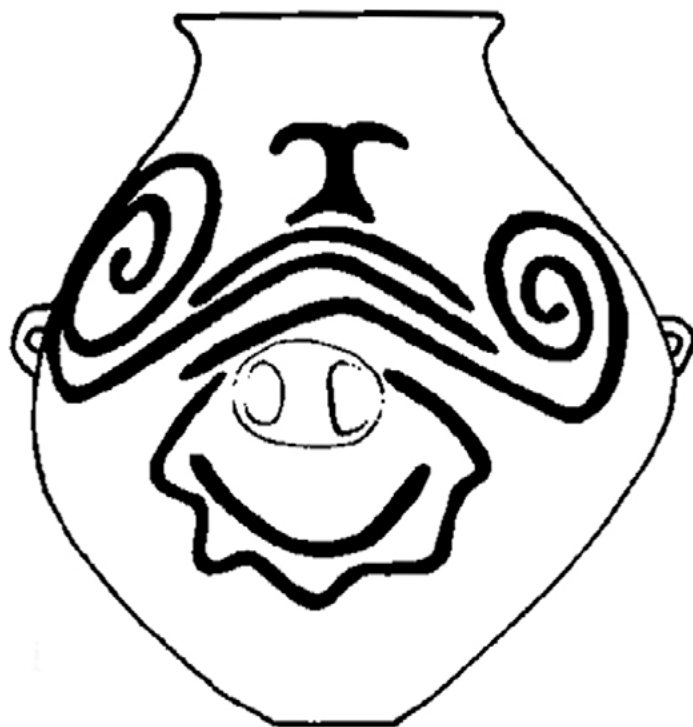
Fig. 1.

In several traditional drug-taking cultures, the name of the sacred plant is taboo, but rarely is there a ban on attempts to portray the ecstatic states, visions, and flights of imagination that result from its use. Among the Tukano Indians of the Columbian Amazon, who consume ayahuasca, for example, the decorative art that covers their houses, textiles, clothes, ornaments, and pottery is almost entirely drawn from trance-inspired visions. This imagery ranges from fantastic beings to abstract geometric patterns ("entoptics") made up of basic design elements such as circles, spirals, chevrons, lozenges, radials and parallel lines.

As the products of neuropsychological events, entoptic motifs are common to all human beings, irrespective of culture or time. The ancient Near East was no exception. The same basic design elements decorate the walls of pre and early state houses and



Relief and impressed design on Kura-Araxes pots from Karaz (above) and Badaani (right).



Sagona, C. and Sagona, A., “The mushroom, the magi and the keen-sighted seers.” In G.R. Tsetschkladze (ed.), *The Black Sea, Greece, Anatolia and Europe in the first millennium BCE*, pp. 387-436 (Paris-Leuven: Peeters, 2011), Figs. 11 and 10.1

temples, stoneware and pottery, amulets and seals. The striking similarity between the Tukano painting and the wall painting from Tell Munbaqa, which record the hallucinatory visions of two people from different cultures separated by over 7300 miles and 4000 years, illustrates just how universal and timeless this imagery is.

In several cases, the ancient Near Eastern design includes a plant (mushroom, cereal grain, tree) or animal (toads, frogs, fish), which is often central and may refer to the source of the hallucinogen consumed.

Something similar has been suggested as an explanation for the presence of a tree on two Achaemenid stamp seals that belong to temple brewers. In each case the tree appears to be the source of an important additive to the contents of the bottle that the brewer/seal owner raises up in his hand. [i]



These examples suggest that hallucinogens played a central role in the social and ritual life of ancient Near Eastern society.

### **How were they regulated?**

The absence of laws, legal suits, or complaints about drug abuse implies that, unlike today, this was not a major concern in the ANE. Several explanations arise from the evidence cited above. Knowledge of which plants to pick, what parts to use, and how to prepare them was limited to specialists. In historical times this was the preserve of the *asû*, a loose equivalent of today's pharmacist, who alone had access to the so-called pharmacopoeia handbook. As in many traditional societies, where medical and magical healing practices are interlinked, the Mesopotamian *asû* collaborated closely with other experts such as the *ashipu* (physician/exorcist) and the *barû* (diviner). They were in charge of the extensive preparatory and purification exercises that preceded the use of drugs, which was steeped in ritual pageantry.

All of this served to limit the use of hallucinogens. The theatrical dimension of hallucinogenic rituals also ensured that the experience, which could be fatal or cause great anxiety, was carefully supervised. Whether in the context of the hunt, a social event, a burial rite, or a religious ceremony, a guide was present "to bridge the two



BM 128852: an Achaemenid period stamp seal (fourth cent. BCE) © Trustees of the British Museum. My thanks to C.B.F. Walker for drawing my attention to this unpublished seal.

worlds of consciousness as a means of controlling and neutralizing perceived evil spirits that appear to the drug user during a session, as well as to evoke culturally expected visions”.[ii]

These traditional constraints are lacking in Western society today, which insists on a division between medicine and ritual and is deeply suspicious of the latter. Here, perhaps, is something we could learn from our past.

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## **For Further Reading**

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## **Additional Links**

Drug References Found on Walls of Ancient Egyptian School  
Ancient Drugs, History Channel





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## Chapter Five

# A Toast to Our Fermented Past: Case Studies in the Experimental Archaeology of Alcoholic Beverages

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## A Toast to Our Fermented Past: Case Studies in the Experimental Archaeology of Alcoholic Beverages

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By Kevin M. Cullen

Archaeologists and historians are constantly in pursuit of the tangible human past, whether it is in the form of material culture or primary written sources. This direct evidence of the past can still leave us disconnected from the full context in which the technology or writings were employed. Therefore, one exciting field of research is experimental archaeology, in which the past literally comes alive through the step-by-step recreation process of an ancient technology, method, or even recipe. Thus, in an effort to make that intangible past more meaningful for the general public, in 2008 I began a brewing series in Milwaukee called Ale Through The Ages at

Discovery World a nonprofit cultural institution located on the shores of Lake Michigan. Relying on published data of ancient fermented beverages (Patrick McGovern, Delwan



Author with Neolithic sickle replica during the Ale Through The Ages Lecture Series



Ale Through The Ages Lecture Series at Discovery World

Samuel, Jeremy Geller, etc.), independent research, and the methods of experimental archaeology, to date we have recreated over thirty ancient and traditional fermented beverages from around the world. More than a thousand people have attended these brewing programs, where participants are treated to a geographical, archaeological, botanical, chemical, and cultural overview of the recipe being recreated. People then add the necessary ingredients to the brew at designated times and return two or so weeks later for bottling and sampling.



Since the earliest beginnings of human consciousness, we have sought to alter our cognitive perceptions for various cultural, political, or religious purposes. The most ubiquitous substance that provokes mind-altering effects is ethanol alcohol, derived naturally from yeast fermentation of sugars. Whether it was from honey, fruit, grain, tubers, or a combination thereof, humans have found nearly every way possible to turn nature's bounty into one sort of fermented beverage or another. What began as a happy discovery, led to a formalized institution of craft specialists who were also seen as alchemists that could combine ingredients of the earth with elements of fire, wind, and water to produce a fermented beverage that was refreshing, nourishing, and cognitively pleasing. It can be argued that the production of beer in particular, played



a critical role in spurring the transformation of wild grain gathering in western Asia to a more formalized system horticulture, which guaranteed more consistent crop yields (Janick 2002). This incentive in prehistoric societies to make more and different types of beer not only helped induce an agricultural revolution, but it played a critical role in all aspects of social life wherever it was imbibed.

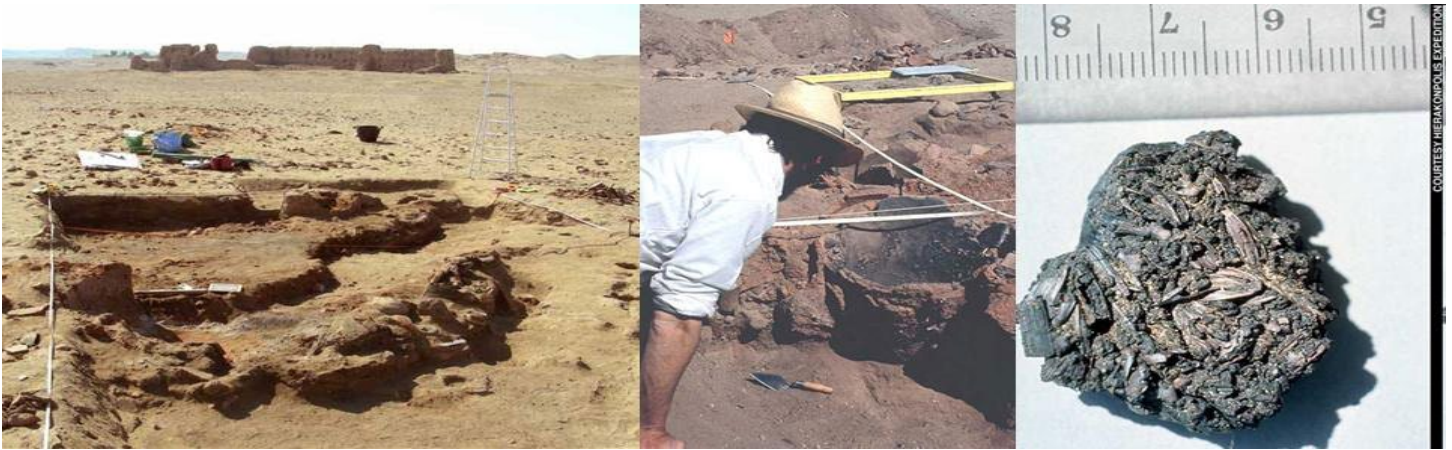
For the purposes of this audience, I will focus on two experimental recipes, from ancient Egypt and ancient Anatolia. Many different styles of beer were brewed throughout the long history of these regions; however, one ancient Egyptian recipe we brewed in a recent Ale Through The Ages program was based on archaeological evidence found at sites such as Hierakonopolis and Amarna (Geller 1989, Samuel 1996). It must be stated that it is virtually impossible to create the exact same fermented beverages brewed by the ancient Egyptian brewers given the geographic and temporal differences between North America and Egypt, nevertheless, the botanical ingredients and brewing methods have not changed all that much.

## Beer in Ancient Egyptian

Beer, called henqet (Hnq.t)  in Ancient Egyptian, was a vital staple in the diet of all social classes. An Egyptian brewer was called 'fty . One could argue that the massive pyramids of Giza may not have been built without the daily rations of bread and beer for the laborers, which offered critical nutrients and caloric intake. Moreover, pyramid texts at Saqqara (earliest ca. 2400 BCE) mention several different types of beer: "dark beer," "iron beer", "garnished beer", "friends beer", "beer of truth", and "beer of eternity." Classical Greek writers called beer Zythos "to foam", and the Greek writer Strabo wrote of Egyptian beer: "Barley beer is a preparation peculiar to the Egyptians, it is common to many tribes, but the mode of preparing it differs in each" (Geography).

Perhaps one of the most compelling discoveries of brewing beer in ancient Egypt comes from the ancient site of Hierakonpolis (City of the Hawk) in Upper Egypt. Excavations led by Jeremy Geller et al. beginning in 1989, yielded evidence of large scale brewing activities. Known as the Vat Site (HK24), it dates to 3,500-3,400 BCE. The name comes from the discovery of six coarse ceramic vats in two parallel rows set within a mud platform. This platform was likely originally covered with an ad hoc superstructure to contain heat. It was estimated that each vat could hold about 16

gallons. Hence the brewery could produce 300 gallons a week, allowing two days for fermentation in the vat. Residue analysis indicated that emmer wheat with dates and possibly grapes were added to provide the necessary sugars for fermentation.



Excavating Hierakonpolis 2007 Field Note 1: <http://www.archaeology.org/interactive/hierakonpolis/field07/1.html>

## Our Ancient Egyptian Ale

A total of 25 gallons of Ancient Egyptian Ale was brewed for our Ale Through The Ages Ancient Egyptian ale class. The original gravity turned out to be 1.062 (15° Plato) due to the addition of wheat malt barley malt and sweet dates. 12 gallons were fermented with a Bavarian Wheat yeast (*Saccharomyces cerevisiae*) strain and another 12 gallons were fermented with natural yeasts present on Algerian dates (Phoenix



Ancient Egyptian Ale undergoing fermentation in Discovery World's THIRST Lab

dactylifera) that were put directly into the cooled wort. Traditional fermentation in ancient Egypt likely occurred from wild yeast found on dates and/or grapes that were placed in fermentation vessels. Fermentation may also have taken place by adding previously fermented beer (which would have already contained yeast) into the fermentation vessels.

Not surprisingly, the commercial yeast took off right away and fermented down to a gravity of 1.008 in three days (i.e. 7% ABV). Meanwhile, the batch with the wild date yeast underwent a slower fermentation and resulted in a soured flavor and a final gravity of 1.020. Finally, a small two gallon batch was fermented in a replica Egyptian earthenware jar. A teaspoon of dry ale yeast was sprinkled on top of ale, which had an original gravity of 1.052 (12.5° Plato). After three days its final gravity was 1.005 (i.e. 6% ABV). For authenticity, this small batch of Ancient Egyptian Ale was served directly out of the ceramic container at room temperature and slightly carbonated. The result was a very clean and refreshing ale, similar to bread with hints of coriander and dates. The batch fermented with Bavarian Wheat yeast was very palatable with bready notes and a champagne-like character. The batch fermented with the dates is certainly funky with apple cider and vinegar flavors overlaid on a malty sweetened date backbone. Based on all of our experimentation, it is clearly evident that yeast/bacteria inoculation plays a critical role in the final result of the beer flavor. Nevertheless, we should all raise our glasses to the brewers of ancient Egypt, and may scientists and scholars continue to discover more insights into their prolific brewing tradition in the years to come.

## **Our Anatolian Ale**

Alcohol in Anatolia is equally as ancient and arguably diverse as the Egyptian tradition. For instance, situated in an agriculturally rich valley and ideal for cereal grain cultivation, is the site of Gordion in north central Turkey. Of particular interest at this site were the remains of several buildings identified as possible breweries/bakeries, based on charred grains, germinated barley, grinders, ovens and ceramic vessels that are all indicative of beer brewing and consumption at Gordion (McGovern 2009). Specifically, evidence of an elite fermented beverage came from the residues found inside a large number of bronze vessels that were buried with a 60-65 year-old male who was laid to rest inside a wooden tomb, over which an enormous earthen mound was constructed. Known as Tumulus MM (Midas Mound), this elaborate burial was believed to have been built for a Phrygian King, initially interpreted to be King Midas. However, recent



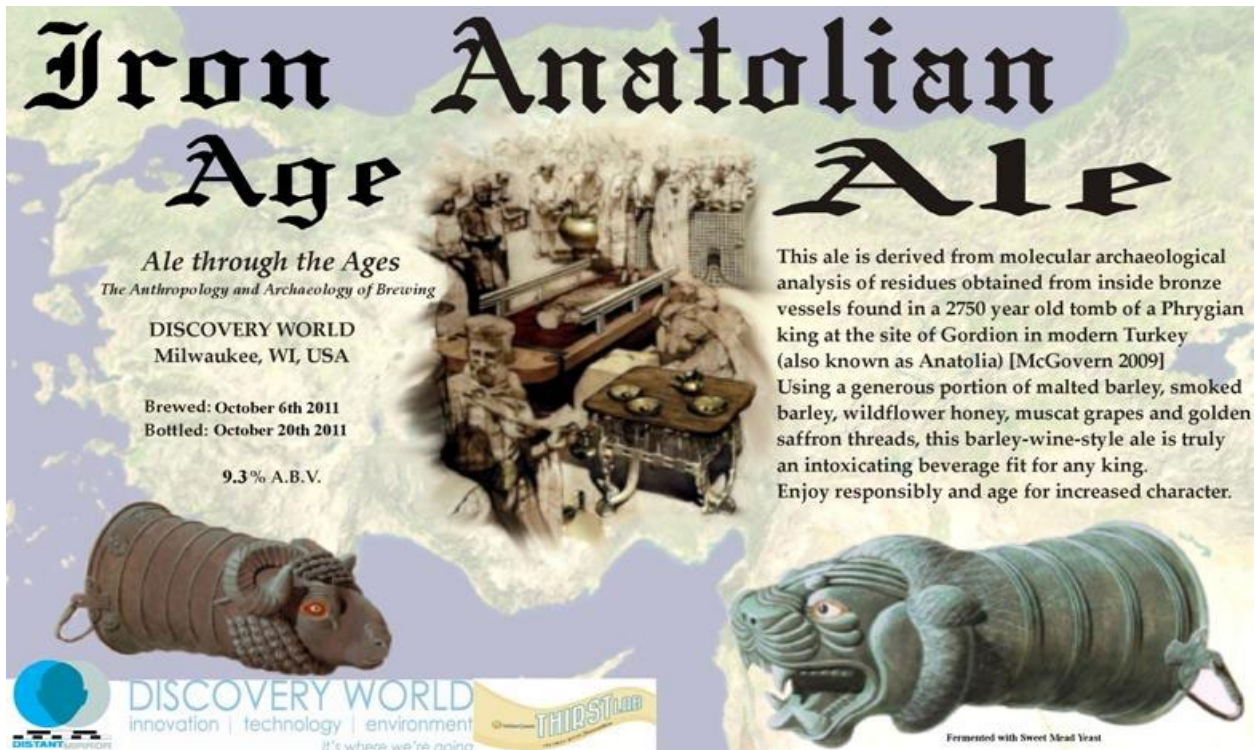
dendrochronology analysis of the tombs timbers indicate a construction date of 740 BCE, several decades before King Midas was known to have assumed the Phrygian throne. Therefore, it may be the burial of his father Gordios, after which the city became known.

Buried with this elderly king were 14 pieces of wood furniture believed to have been used as serving and dining tables for a funerary banquet eaten by the mourners during the burial ceremony. There were also three large bronze cauldrons that could hold at least a 150 liter capacity. A lion-headed situla and a ram-headed situla were also discovered in addition to two jugs with long spouts, nineteen small jugs and at least 100 bronze drinking bowls. Upon closer scrutiny of the residues found inside these vessels, it was determined by Dr. Patrick McGovern at the University of Pennsylvania Museum that these residues included calcium oxalate which is indicative of barley fermentation, tartaric acid, which indicates grape wine, as well as beeswax compounds, which suggests a fermented honey or mead addition. The resulting “Phrygian grog” as McGovern called it, was likely a braggot-style ale fermented with barley, grapes, honey, and the potential addition of saffron for color, taste and preservation (McGovern 2009:134).

In February 2010 and again in October 2011, two experimental renditions of this ancient Anatolian ale were brewed for the Ale Through The Ages series, based on the molecular archaeological analysis of residues. Therefore, using these molecular data and the availability of likely ingredients, I was able to construct a recipe for our experimental Anatolian Ale. The resulting beverage had an original Gravity of 1.074 which was fermented for three days at room temperature, before adding Muscat grapes. At 9% ABV, this beverage was a delightfully robust grape flavored ale, amber in color, with a mild smoky finish. It gained both strength and character with age and became a crowd favorite for all who tried it. This recipe and previous recipes we’ve created can be found on the Distant Mirror blog. <IMAGE 6>



Fermenting Anatolian Ale in Discovery World's THIRST Lab



Anatolian Ale label

One reason for the great staying power of beer is that it entices our full range of human experiences: visual, audible, olfactory, and of course taste. Combine all these together and the result is a neurological chain reaction that induces the euphoric and often sought after beer buzz. Tip another and our inhibitions become muted while our conversations become amplified. A common reward at the end of a laborious work day is often a beer, which is why it is affectionately known as “happy hour.” Although, happy hour is not a new phenomenon, it has been around for thousands of years. From the laborers that built the great pyramids of Giza to the countless armies from Mesopotamia or the soldiers of the American Revolution and beyond, all were incentivized by the provisions of beer. Over the millennia and across the world, our beloved family of beer has evolved into one of the oldest and most diverse beverage categories on the planet. Today beer continues to play an important role as a social lubricant and is abundantly evident at concerts, sporting events, family gatherings, even religious celebrations. Every time we take a sip of beer, we are literally imbibing our fermented past. It is what connects us to our distant and more recent ancestors. Cheers!

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