ANE 103: Ancient Lives
Fall 2018

Mesopotamian Beer Reconstruction: Final Report

Introduction

In 879 BC, Ashurnasirpal II held “The Greatest Party Ever Known.” Celebrating the construction of his new city, Kalhu, Assyrian king Ashurnasirpal II hosted a party with nearly 70,000 attendees, gathering foodstuffs such as 14,000 sheep, 10,000 eggs, 10,000 loaves of bread and, of course, 10,000 measures of beer (Mark 2014).

Beer has been around since 10,000-8,000 BCE. We’ve found potential evidence of it in the mysterious Gobekli Tepe in eastern Turkey, and we know of beer brewed in China around 7000 BCE (Mark 2011). Beer pre-dated agriculture, and it has served as one of humanity’s most important social lubricants for bringing politicians, families, and many more people together.

It is speculated that the discovery of fermentation and use of beer in both religious and social activities led to the domestication of cereal. Early grains were “better suited to making gruel or beer than bread” (Dietrick et al., p.689), holding advantages in both containment and nourishment.

Texts show that beer was a common beverage consumed regularly throughout all levels of society. It was essential to the banquet, payment for court proceedings, burials, greetings with dignitaries and other royals, ritual, and recreation. Beer was consumed both privately in home brews as well as dedicated taverns, “the classical place for drinking and conversing” (Neumann, p.325). In fact, beer was so common and popular among the Mesopotamians, the Sumerians even dedicated a goddess to the subject; her name was Ninkasi- the goddess of Beer. Though information has been found scattered in various clay tablet lists and letters, only one Sumerian drinking song has been found (Oppenheim 1964).

However, before the 1960s, alcohol was studied as a problem and not so much as a medium for socializing. The early 1900s temperance movement characterized alcohol as an “individual pathology,” (Dietler 2006, p.230) a poison that ruins society. It’s important to recognize that this was only one perception, however, and alcohol as a concept is relatively recent and culturally-specific (Dietler 2006, p.231). In other places, alcohol is not necessarily a substance that should be avoided or even an ethanol-containing drink. Dietler writes, “Young Haitians did not consider two favorite rum-based beverages (kremas and likay) to be alcoholic drinks,” (231) and thus it is normal for children to drink kremas and likay. As we delve into the Mesopotamian way

of brewing beer, we call to attention the specificity of their brewing processes and purposes. We also signify how their drinking purposes are similar to modern drinking occasions. There is a certain universality in alcohol that has remained throughout history, and in the process of brewing Mesopotamian beer, we experienced it ourselves as well.

Over two different brew days, together we experienced the pain, joy, and excitement of attempting to recreate what may or may not be a recipe from millenia ago. For example, on the first brew day, we made the mistake of attempting to use a pot too large for the stovetop, and thus, it would not heat to the temperature we needed. Another time while crushing ice, the knife went right through the plastic bin and leaked all over the table and ground. Despite all that went wrong, there was nothing more satisfying and team building than when we experienced wins such as a batch that reached the perfect pH level, and regardless of the flaws, the brew days showed us what the Mesopotamians must have experienced while brewing beer: the jubilation of a successful brew and the heartbreak of a less than successful brew.

Brewing Process

We tried to stay faithful as much as possible to “A Hymn to Ninkasi” in our brewing process. We soaked the malt in warm water, relating to the line “Ninkasi, you are the one who soaks the malt in a jar.” We extracted the wort from the mash and cooled it, as in the lines “Ninkasi you are the one who holds with both hands the great sweetwort” and “You are the one who spreads the cooked mash on large reed mats, coolness overcomes”, although we cooled the wort after extraction from the mash, while the line in the hymn seems to suggest that they cooled the mash before extracting the wort. We tried both conventional yeast and sourdough to pitch, and sourdough was intended to be as close as possible to the *bappir* mentioned in the line, “Ninkasi, you are the one who handles dough with a big shovel, mixing, in a pit, the *bappir* with sweet aromatics.” We’re not entirely certain what *bappir* means, but one theory is that it was a twice-baked barley bread that was used in the pitching process instead of yeast. One professor of ancient food, Tate Paulette, suggested that sourdough would give a similar effect, so we tried that. Finally, we restrained from adding hops to some of the batches, which, while almost universally used in modern brewing processes, was not used in ancient Mesopotamia or mentioned in “A Hymn to Ninkasi”. Whilst making our brew plan we tried to stay as faithful as possible to the steps outlined in this Hymn.

Having purchased our materials and equipment locally at the Modern Homebrew Emporium, we set about brewing our beer. The first step of this process was to soak the pre-germinated malt in warm water for an hour – the temperature of this was 155-160 degrees Fahrenheit. Since ancient Mesopotamians could not measure temperature, we

also looked for visual cues like bubbles forming on the inside of the pot and just beginning to float up. With the hour passed, we then drained the wort from the mash. This wort was then boiled for 45 minutes to an hour, based on visual inspection. At this point we added dates and/or spices to the appropriate batches. This wort was then placed in an ice bath and set down to cool to 70° F. Pitching was the next set, which involved adding either yeast or starter (in our case sourdough, with or without emmer) – this kickstarted the fermentation process. Once fermentation had, or in some cases not began, it turns out, the buckets were sealed and left to ferment for a few days. Once fermentation had been given ample time to take place, we conducted taste tests and evaluated the varying success of the different recipes. Off of this feedback, the same steps were taken on second brew day, this time with different ingredients and recipes, and hops!

Initial Brewing Plan

Our initial brewing plan was subject to a number of external constraints, especially that we were unsure whether or not we would get to a second round. Accordingly, and based on evidence for spiced beers and beer made with sourdough starter as the fermenting agent, we set up an experiment that would test both variables independently and in parallel. We split the batches into 6 smaller batches as follows:

Standard Yeast:	Sourdough Starter:
Dates	Dates
Cardamom	Cardamom
Garlic + Thyme	Garlic + Thyme

This split allowed us to compare the sourdough beer against the standard beer, and to compare the different spices used.

Secondary Brewing Plan

For our second brewing, we decided to use the following two recipes:

1. Spiced beer - barley mash, date syrup, nutmeg, coriander, and industrial yeast
2. Emmer beer - barley and emmer mash, industrial yeast

We decided to make spiced beer because we previously enjoyed the fragrancy provided by the spices and felt that it was a component of the brew we wanted to maintain. However, we knew that we wanted to put less spices in because the spice was overwhelming in our initial brew. We decided to make emmer beer because emmer was one of the the wheats that Mesopotamians used for their beer (Damerow 6).

We decided to brew two pots of beer for each recipe, one pot with hops and one pot without hops. While we know that hops was not used in Mesopotamia, we wanted to compare and contrast both the taste and preservative properties of beer.

Results:

In the first round of brewing, we found that most of the beers were at least drinkable after fermentation, with the exception of the date flavored beers. The date flavored beer pitched with sourdough had chunks of material in it and smelled bad, suggesting that it had spoiled. This was likely due to bacteria in the dates not being completely killed during the date processing steps. Upon careful sampling, none of the date flavored beers had much date flavor present, likely due to the date sugars being consumed by the yeast.

The sourdough pitched beers ended up being too acidic (pH 3) at the end of the brewing process, likely due to pitching too much sourdough. On sampling, they were considered disgusting.

The cardamom and garlic samples were fit to drink (with a pH 4.5) and were served to the class in the cookout. The cardamom sample was considered too strong, due to us adding half a bottle of cardamom to the beer. The garlic sample was considered decent, with the garlic considered savory but not great. In all the beers, there was a strong taste of barley, which was to be expected. The cardamom sample was measured with an original gravity of 1.09 and a final gravity of 1.07, which calculates to an alcohol by volume percentage of (1.09-1.07)*131.25 = 2.63%.

In the second round, the spiced beer with and without hops and the non hopped emmer beer survived the fermentation, but surprisingly the emmer sample with hops added went bad. Evidently, the presence of hops was not enough to prevent the growth of bacteria in that sample. Furthermore, a week after the non hopped emmer beer was first sampled, (two weeks after brewing), that sample also went bad, suggesting a preservative role of the spices used in the spiced beer samples.

The spiced beer without hops had an alcohol by volume percentage of (1.09-1.03)*131.25 = 7.88%, the spiced beer with hops had an abv percentage of (1.115-1.04)*131.25 = 9.84%, and the emmer beer without hops had an abv percentage of (1.08-1.02)*131.25 = 7.88%. These percentages do seem to be rather high, suggesting a systematic error in using the hydrometer. However, whether or not the hydrometer performed correctly, we should try again to see if we can replicate all these results.