

The Ancient Process of Preserving Grape Juice

By Kyle Pope

Introduction. We observed in our first lecture the different ways that words translated “wine” can be used in Scripture. “Wine” can be considered a blessing from God (Judges 9:13; Deut. 7:13; 11:14; 33:28) as well as something the godly are commanded to avoid (Prov. 23:31).

- We have argued that this reflects a broad use of these words that can refer to both alcoholic drink as well as juice straight from the grape.

If this is true we must be able to demonstrate that ancient people understood how to control and regulate the process of fermentation.

- It is often asserted by modern writers that this would have been impossible without modern refrigeration.
- I have had people dismiss this as “wishful thinking” assuming that every time Scripture uses the term “wine” it must refer to exactly what we might purchase at a liquor store today.
- Modern biblical reference works contribute to this confusion. Unlike some works from the 19th century that addressed such distinctions, modern writers shamefully oversimplify this issue.

We will see in this study that not only did ancient people understand this process, but it was used by pagans and non-pagans alike to produce a wide variety of different drinks, of varying strength, taste, and alcoholic content.

I. Ancient Evidence. There is ancient evidence that non-alcoholic drinks were still called “wine.” In ancient times drinks were called “wine” that ranged anywhere from pure grape juice all the way to vinegar. There is evidence from ancient times that drinks called “wine” were prepared and consumed that were non-alcoholic.

A. The Process of Fermentation. How does fermentation work? Grapes produce sugars that ferment under the right conditions. These sugars must have contact with yeast. Grapes have natural “ambient yeast” inside and on the skin. This yeast turns sugar to alcohol. The amount of sugar and yeast varies based on climate, rainfall, and temperature. The lower the amount the lower the alcohol content. To regulate this, some winemakers add yeast (and even sugar) to affect the taste and strength of wine.

1. Air deprivation, cold temperature, concentrated sugar, and separating the yeasts in the skins from the sugar can impede fermentation.

B. Ancient Methods.

1. **Filtration:** Pliny the Elder wrote that the most suitable drink for all men was wine, “with strength reduced by the filter,” even explaining the difference between “must” and fermented wine (*Natural History*, 23.24). Plutarch devotes an entire discussion to whether wine should be strained, declaring wine “cleansed” by a strainer, has its “strike and madness taken away” leaving one in a “mild and healthy state of mind” (*Symposiacs*, 693b 3-5). The Babylonian Talmud records debates regarding whether wine should be filtered on the Sabbath or not (*Shabbat*, 139b).

2. **Boiling:** When freshly pressed grape juice is boiled, water evaporates leaving a thick syrup that doesn't ferment as easily and can be diluted later. Aristotle wrote about wines in Arcadia so thick they were scraped off the wineskins so they could be rehydrated in order to drink them (*Meteorologica* 388b, 6). The Roman poet Virgil described housewives boiling down "sweet must (i.e. freshly squeezed grape juice)" (*Georgics*, 1.295). After the New Testament, the Mishnah records debates among Jews about whether boiled or unboiled wine was used in the heave-offering (*Terumot* 11:1).
3. **Dilution:** A common practice among the ancients (even among those not concerned with drunkenness) was diluting wine with water. This was as much as 20/1 (Homer, *Odyssey* 9.208), 8/1 (Pliny, *Natural History* 14.6), or among the Jews 2 or 3/1 (*Shabbat* 77a; *Pesachim* 108b). The apocryphal book of 2 Maccabbes claims, "It is hurtful to drink wine or water alone... wine mingled with water is pleasant" (15:39). In Plato's *Symposium* a discussion is held at the beginning of a drinking party about whether they wanted to drink so they could get drunk fast, or water it down to allow them to drink and talk all night (176a-c). The third century AD Roman author Athenaeus described and even quoted ancient Greek and Roman authors who valued diluting wine with water, "the sober stream" (*Deipnosophists* 11.13). He devotes a long discourse to explaining different proportions of water to wine used in order to prevent drunkenness, quoting authors centuries before his own time (*Deipnosophists* 10.21-39).
4. **Storage:** Boiled or filtered wines (like other wines in ancient times) were stored in earthenware vessels or sometimes in animal skins for travel. The University of Pennsylvania holds a two-and-one-half gallon jar that is believed to be the oldest wine jar ever found (Object No. 69-12-15). It is lined with terebinth resin to seal it. Cato the Elder (234 BC – 149 BC) claimed that "must" stored in an amphora coated with pitch and stored thirty days in a water tank could be removed and kept as "must" for the whole year (Cato, *De Re Rustica* 120). Columella, who was the Roman tribune of Syria in 35 AD claimed the same thing but extended the period during which the amphora was submerged in water to forty days (*De Re Rustica* 12.29). Some earthenware vessels were also glazed. A multi-gallon Canaanite wine vessel that was found at Tel Kabri, near the Mediterranean coast in northern Israel, believed to date to around 1800 B.C. was used to store gallons of red wine and was covered with a white glaze. Earthenware vessels could be sealed with a pitch coated cork (Horace, *Carminum Liber* 3, 8, 9-12), but other methods of sealing were also used. Columella described covering an amphora, plastering over the lid, and then covering it with leather (*De Re Rustica* 12.39). In August of 2012 a 1st century AD or BC Roman shipwreck was discovered off the coast of Italy with nearly 200 amphora containing wine, oil, grain, and pickled fish with pine caps coated with pitch still sealed and in place (*ABC News*, Aug. 9, 2012). The ancients recognized that "must" stored in the cold does not ferment (Plutarch, *Natural Questions* 27). When attempting to keep "must" it was generally stored in a cool place and could be kept as sweet "must" for as much as a year (Columella, *On Agriculture* 12.20.1; 12.37.1; 12.29.1).

II. **Testing Ancient Methods.** *Are these claims true?* Do these claims accurately frame the background and environment in which biblical statements about "**wine**" must be understood? Yes, and is can be proven.

A. Background. In 2010, Wilson Adams, who was at the time editing *Biblical Insights*, asked me to write an article he entitled “Social Drinking—It’s Okay, Right?” This article ran in April of 2010. In the article I cited some claims made by ancient writers about methods they used to prevent (or impede) alcoholic fermentation. Shortly after the article ran in *Biblical Insights* I was contacted by a brother in Christ with a background in micro-biology who took exception to the claims of the ancients, and wrote in one of the final e-mails we had that year that the ancients were “grasping for straws.”

1. That motivated me to find out for myself. Some of the brethren where I preach heard about this, and from time to time they would tease me about “brewing liquor” in my office. That wasn’t quite accurate but what I did was hand squeeze 11 ½ pounds of black grapes and test two of the common methods the ancients talked about: *filtering* and *boiling*.
2. In May of the same year produced six test samples from the grapes I hand squeezed. The first was pure grape juice. The second was juice filtered through a muslin cloth. The third was juice filtered and brought to a boil. The remaining samples were juice filtered, boiled, and reduced to 1/3, 1/5, and 1/10 of their original volume.

B. Final test results.

1. These samples were stored in my office under temperatures that could easily have been reproduced in Bible lands. The first testing was done at West Texas A & M University in Canyon Texas with the help of Dr. Pat Goguen (a deacon at Olsen Park at the time who holds a PhD in Chemistry) and a professor at the university.
2. The final testing was done some months later with the help of Pat Goguen, with equipment supplied by Eddie Prock (a science teacher at a neighboring congregation in Amarillo).
3. Final results.

Condition	Unfiltered		Filtered	Filtered & Boiled	Filtered, Boiled, & Reduced 1/3	Filtered, Boiled, & Reduced 1/5	Filtered, Boiled, & Reduced 1/10
Date Sealed	5/5/2010		5/3/2010	5/4/2010	5/3/2010	5/4/2010	5/6/2010
Date Opened	WT Test 3/25/2011	1/3/ 2012	1/3/2012	1/5/2012	1/5/2012	1/7/2012	1/7/2012
Alcohol Content	12 -6%	6.6%	0%	0%	0%	0%	0%

III. Were These Methods Used in the Bible? *Were these methods used in the Bible?*

FILTERING: Scripture directly refers to filtered “wine on the lees, well-refined” (Isa. 25:6, KJV, ASV). The word for “well refined” means, “to purify, distil, strain, refine” (Gesenius).

BOILING: “Wine mixed with water” (Isa. 1:22. The Hebrew word for “mixed”—*mahol* means “to cut down or reduce.” The word *mezeg* used in Song of Solomon 7:2—wine mixed with water.

A. There were, “all sorts of wine” in the Bible (Neh. 5:18).

- “New wine” (Hos. 4:11)
- “Sour wine” (Matt. 27:34)
- “Red wine” (Isa. 27:2).
- “Sweet wine” (Isa. 49:26).
- Wine mixed with milk (So. 5:1), water (Isa. 1:22), spices (So. 8:2), myrrh (Mark 15:23), and for medicinal use (1 Tim. 5:23).

B. Some of these wines would not have been alcoholic or intoxicating.

1. “New wine (*gleukos*)” (Acts 2:13). Plutarch discussed why it is that “new wine (*gleukos*)” is not as intoxicating as other wines. He states, “few could drink enough to make them drunk” (*Questiones Convivales* 3.7).
2. This is not the same thing we call “wine.”

Conclusion. We have seen in this study that not only did ancient peoples understand the process of fermentation but they practiced various methods to manipulate and impede this process. Such techniques were widespread and produced drinks that (while still referred to as “**wine**”) were not equivalent to the modern drinks we know by this name. If pagans, unconcerned with moral accountability before God utilized these techniques, it is reasonable to assume that Jews and Christians concerned with accountability to God for their sobriety would also make use of these techniques.