

Sahti

Traditional Finnish Juniper Ale

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For this paper, I am using the generally accepted definitions of beer and ale, whereby ale is a malt beverage made with herbs and spices while beer is a malt beverage made with hops, rather than the modern definitions determined by the use of top or bottom fermenting yeasts.

Ale is made of malte and water; and they the which do put any other thynge to ale than is rehersed, except yest, barme, or goddesgood, doth sophysticat there ale. Ale for an Englysshe man is a naturall drinke. Ale muste have these properties, it muste be fresshe and cleare, it muste not be ropy, nor smoky, nor it must have no wefte nor tayle. Ale shulde not be dronke under .v. dayes olde Barly malte maketh better ale than Oten malte or any other corne doth ... Beere is made of malte, of hoppes, and water; it is a naturall drynke for a Doche man, and nowe of late dayes it is moche used in Englande to the detryment of many Englysshe men ... for the drynke is a colde drynke. Yet it doth make a man fatte, and doth inflate the bely, as it doth appere by the Doche mennes faces and belyes.¹

The first English documents cited by the OED in which the term *beer* signifies the hopped beverage are customs records of the 1390's. One of them, interestingly enough, is for Margery Kempe's town of Lynn, where barrels of beer imported by alien merchants from the low countries were taxed. Margery herself records what must be among the earliest instances of hopped beer consumption in English literature.²

The Malt

The process of malting grains for brewing was known for centuries.

...the Greeks ascribed the invention of malt to the Egyptians. The art of malting, the key to successful brewing, is thus one of the most ancient of processes. The art found its way from Egypt to Tyre and Sidon and thence to Carthage, Greece, Rome, Germany, Gaul, the Scandinavian countries and to Britain.³

Essentially, malting consists of allowing grains to germinate to a certain point, followed by the application of heat to halt the growth and kill the sprouts. What was left in the grain was a combination of convertible starches, amino acids, and amylase enzymes which enabled the mashing process – the production of fermentable sugars.⁴ We know that this process was well established by the time of Charlemagne by looking at the plans for construction of the St. Gall Monastery c.820 AD. The plans called for three separate breweries, a granary, a mill, and a kiln for the production of malted grains.⁵

Kilns used for drying the malt were primarily fired by wood, straw, or peat. Depending on the

¹ Boorde, folio Gii-iii

² Hagen

³ Brookes, pg 26

⁴ Palmer, pg 141-142

⁵ Unger, pg 27-29

logistics of the kiln itself, the quality of the fire, and the proximity of the grains to the heat source, the individual grains might be lighter or darker. In earlier periods, these grains would not have been separated out by color, but would simply have been used collectively. This would have resulted in a beer of color anywhere from a pale amber to a rich brown. Since beer styles were not defined to the level of detail they are today, color would have been largely dictated by individual kilns within each locale. However, by the mid to late 17th century, recognition of the differences between various roasts of malt was common. "...it then must be put on the Kiln to dry four, six, or twelve Hours according to the nature of the Malt, for the pale sort requires more leisure and less fire than the amber or brown sorts."⁶

"Colored malts resulted from uneven heat control which would have produced pale, amber and brown malts in the same batch, and likely in random distributions. Brown malt was also intentionally produced to reclaim slack malt."⁷

For this recipe, I used 9 pounds of pale malt, 2 pounds of rye malt, and ½-pound each of 40L crystal malt and smoked malt. For the smoked malt, I took 2-row pale malt and roasted it lightly over a greenwood fire.

The Yeast

Although yeast as a microbe was not known until the early 19th century, yeast itself was known earlier than the days of the Roman empire. Recognized as both the froth that rose to the top of the fermenting vat and the sludge that fell to the bottom, its cause may not have been well known but its effect was certainly common knowledge among both brewers and bakers.

The traditions of brewing were carried on and thrived under the Catholic Church. Nearly every major monastery in medieval Europe contained a brewery that served not only the monks but also pilgrims and the surrounding villages (perhaps as an inducement for attending mass). One large monastery in Switzerland had three breweries, each adjacent to a bakery. Brewing and baking, in fact, were closely related activities in ancient and medieval times.⁸

The presence of an agent for fermentation was known at least in France in the 13th century. In a comprehensive law enacted by Louis IX in 1268, numerous strictures to ensure the quality of fermented beverages are laid out, including regarding the sale of yeast barm. "No beer yeast shall be hawked about the streets, but shall be all sold in the brew-houses to bakers and pastry cooks, and to no others. Beer yeast brought by foreigners shall be inspected by a jury before it is exposed to sale."⁹

Spontaneous fermentation was undoubtedly the result of natural yeasts found in the atmosphere, or exigent on the leaves and skins of various ingredients added to provide flavor. Dominant strains of wild yeast in any locale would have been the primary means by which yeast made it into the fermenting vessel.¹⁰ Wild yeasts by their very nature are aggressive, highly tolerant of a hostile

⁶ Fox, pg 11

⁷ Hardy

⁸ Kiefer

⁹ Salem, pg 19

¹⁰ Meade

brewing environment (able to survive in more extreme temperatures or in a high-alcohol beverage), and more likely to produce what we would today call 'off flavors'.

Spontaneous fermentation—what I am hereby referring to as nothing short of “immaculate”—is an age-old practice, first by accident and then by intention, that truly puts Mother Nature at the helm of brewing magic. This type of fermentation takes place when ales are fermented with wild yeasts—from an open window, for instance, or already residing in a barrel...¹¹

This type of fermentation was suspected, at least, as many cities and manors would put their breweries near their bakeries, thus making use of a known source of yeast spores.

Relying on airborne yeasts, brewers virtually never got a distinctly high or low fermentation variety but rather something mixed. The method worked but was haphazard and raised the risk of infection from unwanted yeast strains which could ruin the beer.¹²

[For this particular batch, I pitched a fresh packet of Fleischmann's baking yeast.](#)

The Juniper

Evergreen ale may have been a staple in Scandinavia dating to ancient times. There is a reference to the use of the new shoots from the ends of evergreen branches in the production of wedding beer in the ancient saga *Kalevala*, book XX.¹³ The folklore contained therein is referenced by Tacitus in the second century, although a collective account of the poem translated into English is only available to us from the 19th century.¹⁴ Juniper is reputed to have some antiseptic qualities¹⁵, and in fact the juniper berries are used to produce gin – a restorative tonic dating to the early 16th century.

Juniper ale and beer is the traditional brew of the Scandinavian countries: Norway, Finland and Sweden. There are seven methods used in these countries for brewing juniper ale: boiled mash and wort, boiled mash and wort with repeated pourings, the wort boiled but not the mash, mash and some of wort boiled, mash boiled but not the wort, some wort boiled but not the mash, and neither mash nor wort boiled (this is known as raw ale).¹⁶

Scandinavian beer culture have been traced back at least to the Viking Age (9th – 11th centuries). For example, Asplund (p. 25) notes that sahti barrels were found in the 1930s on a sunken Viking wreck off Norway. The design of the barrels was dated to the 9th century, when sahti may have been popularised in Finland and, to an extent, in parts of Sweden and Norway.¹⁷

¹¹ Herz

¹² Unger, pg 152

¹³ Crawford, pg. 306.

¹⁴ Crawford, pg. vii.

¹⁵ Oliver, pg. 431.

¹⁶ Bessette

¹⁷ Ovell, pg. 4. Note that Asplund's reference is actually to the Oseberg ship find, which was a ship discovered in a burial mound rather than a ship sunk off the coast as Ovell implies.

The traditional Scandinavian brew called *sahti* dates at least to the 8th century¹⁸, and uses juniper in two forms.¹⁹ The wort is cooked with juniper berries or sections of juniper twigs. The wort is then filtered through a mesh made up of juniper twigs. The beer thus enjoys both the cooked and the uncooked adjuncts of juniper to affect the finished flavor.

Juniper is usually the star of the show in sahti, but it served as more than just an ingredient. First, a bundle of juniper branches ... were thrown into the strike water and brought to a boil. This not only added flavor to the hot liquor, but the juniper-infused liquid was used as a sanitizer in which all the equipment was dipped. Juniper branches, along with a layer of straw, were also traditionally placed at the bottom of a a trough-like vessel called a *kuurna*. The wort was sent through the *kuurna* as a means of filtration, but also allowed the liquid to pick up some more of the juniper ... character. This can be mimicked by the modern homebrewer by layering juniper branches over your mash tun's filter device.²⁰

While modern sahti is usually hopped, this was not the traditional practice. Juniper has both a bittering component, and a preservative quality to it.

Juniper is the most important brewing herb in the Nordic and Baltic farmhouse ales. Traditionally the juniper flavor comes from the branches laid on the bottom of the lauter tun filter or from juniper infusion (branches infused in hot water). The taste of branches is needle-like and woody, somewhat different than flavor of berries. Hops are used fairly often, but usually in minor quantities. Sahti is often unhopped.²¹

On brewing day, I lined the bottom of my mash tun with a 4-inch thick woven bed of juniper branches. I used *juniperous communis*, as this is the species that is most common in southern Finland. Because it was early in the summer, the branches did not have berries. This was a single-step infusion mash using the "known ratio" of three parts boiling water to one part tap water to achieve the correct mashing temperature. I used a total of 8 gallons of water, and held the mash for 60 minutes. After the first hour, I drained off the wort and recycled it back through the grain bed. I did this to allow the grain bed and juniper mesh to filter out the largest pieces of detritus... eight cycles total. Ultimately, I achieved a total boil volume of just under 6.5 gallons. I boiled the wort for 90 minutes, stirring regularly with a fresh juniper branch.

Primary fermentation took place in an open plastic bucket covered with a linen towel, and lasted 9 days. The wort was then transferred to a closed glass carboy for the remainder of the fermentation cycle, which lasted 12 days. Bottling was done in a Cornelius keg. Note that the beverage was still actively fermenting at the time it was put in the keg. As of the date of Kingdom A&S, the beer will have been aging in the keg for about 5 months.

¹⁸ Cullen

¹⁹ Mosher, pp. 244-5.

²⁰ Bryant

²¹ Laitinen

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