Development of a New Scottish Mead
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Introduction

Mead is defined as an alcoholic drink produced from fermented honey and water. Its production dates back to almost 7000 BC and it is the oldest known and probably first alcoholic drink to be made. Unsurprisingly during its history Mead was the drink of choice for some of the most renowned philosophers (Aristotle) and warriors (Beowulf), and may be the basis for the legendary ‘Ambrosia’, the nectar drunk by the Gods in Greco-Roman mythology. Despite its impressive pedigree Mead is a drink, which at first glance, seems to have fallen out of favour with the drinking public.

Mead can be further separated out into 4 different styles, the true Mead, the Braggot, the Melomel and the Methlegin. True Mead is produced solely with bee hive products such as honey, pollen, propolis, royal jelly or honeycomb. Braggot is a style of Mead that is effectively a hybrid between a beer and a Mead with a portion of the products fermentable sugar being derived from barley or other cereals. Melomel is similarly another hybrid between cider and Mead only with fruit providing a portion of the fermentable sugar. Finally Methlegin is a Mead featuring botanicals such as herbs and spices, similar in some respects to wines.

In this study, 4 Mead recipes were designed according to each style:

<table>
<thead>
<tr>
<th>Mead Style</th>
<th>Ingredients</th>
</tr>
</thead>
<tbody>
<tr>
<td>True Mead</td>
<td>Pollen and Propolis</td>
</tr>
<tr>
<td>Braggot</td>
<td>Peated Malt and Heather</td>
</tr>
<tr>
<td>Melomel</td>
<td>Pear and Berry</td>
</tr>
<tr>
<td>Methlegin</td>
<td>Elderflower and Rose</td>
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</tbody>
</table>

Pilot scale fermentations of each recipe were carried out and the final meads analysed by a taste panel and brewing competition judges.

Methods

Raw Materials: Cereals, botanicals and fruits that may be sustainably sourced in Scotland were investigated prior to recipe design. Honey products were all supplied by Plan Bee Ltd.

Must preparation: Honey was dissolved in pre-boiled hot water until it had completely dissolved, in order to pasteurise the honey the must was heated to 60°C for 20 minutes.

Yeast preparation: A 500ml sample of the pasteurised must was diluted to reach the recipes target gravity. Dried yeast was then added to the must along with Brouk YEAST-V7 and covered.

Base preparation: Cereal, botanical and/or fruit bases were prepared according to Mead style. For True Mead, the propolis was ground to a powder and placed in a pot containing a litre of pre-boiled water. The pollen was added to the pot and the water heated to 50°C and held for 20 minutes. The liquid and residual particulate matter was then added to the fermenter. For Braggot, 5L of strike water was heated to 76°C, the malt and oats were added and mashed at 69°C for 60 minutes. The wort was then drained to the kettle and the residual grains were sparged until 12L of wort was collected. The wort was brought to a boil for 60 minutes and the hops and heather added. For Melomel, fruit was pressed in two batches, pears in one and raspberries and blackberries in the other. The juice was collected and sealed in glass containers. In order to preserve the juice it was pasteurised by placing the sealed glass containers in a pan of water and heated at 70°C for 20 minutes. For Methlegin, elder flowers, rose petals and rosehips were placed in muslin bags and submerged in a pan containing 5L of water. The water was brought to the boil and covered; the boil was maintained for 15 minutes before adding both the liquid and bags of botanicals to the fermenter.

Fermentation: Must, yeast and base preparations were combined and fermented at 18C for 14 days.

Conditioning: Cold conditioning was carried out at 4°C for 7 days followed by bottle conditioning at room temperature (20 ° C) for 7 days.

Results and Discussion

Attenuation of Meads
All meads attenuated a great deal more than anticipated resulting percentage alcohol by volume shown in table 1.

<table>
<thead>
<tr>
<th>Recipe</th>
<th>ABV %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pollen and Propolis</td>
<td>14.17</td>
</tr>
<tr>
<td>Peated Malt and Heather</td>
<td>9.88</td>
</tr>
<tr>
<td>Pear and Berry</td>
<td>7.02</td>
</tr>
<tr>
<td>Elderflower and Rose</td>
<td>11.44</td>
</tr>
</tbody>
</table>

The increased attenuation resulted in a dryer mouth feel.

Sensory Analysis
In an initial taste panel assessment, the elderflower and rose was the most successful recipe in terms of tasters’ preference with little difference in reception to the other recipes. A further hedonistic panel where tasters were asked to score each recipe on appearance, aroma, taste, mouth feel and overall enjoyment, found that the Pollen and propolis Mead scored similarly to the peated malt & heather at slightly above average. Interestingly from the results and comments received it appears that although most deemed the beverage as average some considered it very good with others considering it awful, a true ‘marmite’ type product.

In general the Elderflower and Rose Mead was most positively received with the main complaint about all the recipes being that the mouth feel was to thin and a lack of honey flavour and texture.

Brewing Competition
All 4 meads were entered into the speciality beer category within a local beer competition (“Beyond Beer” Festival, Traquair House, Innerleithen, Scottish Borders; 2nd August 2014) judged by a panel of experts. The Elder Flower & Rose Mead won the competition giving a clear indication of the viability of this recipe.

Conclusions

When comparing the end products to the predicted outcome for the products it is clear that there is need for development in two key areas: the effects of macerating botanicals and adaption due to higher attenuation rate. However, the study demonstrated that it is possible to produce a high quality Mead within a short timeframe confirming the commercial viability of this beverage style.

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For further information
Please contact Dr Annie Hill (a.hill@hw.ac.uk). More information on this and related projects can be obtained at www.icbd.hw.ac.uk.