

Flavour

This disclosure relates to beer and beer-tasting non-alcoholic beverages, and to the improvement of the taste of such beverages.

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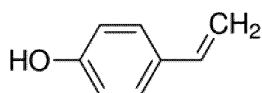
Beer is an alcoholic beverage brewed from cereal grains and has been known and appreciated from antiquity. Its particular taste qualities, particularly the distinct bitterness and maltiness, are so desirable that it has been sought to replicate these taste characteristics in non-alcoholic beer beverages. In addition, it is desirable to enhance the characteristics in beers and beer beverages that are inherently lacking in these qualities. Both brewed beer and beverages that seek to emulate beer flavor shall hereinafter be described as "beer beverages".

It has now been found that it is possible to enhance the desirable flavor qualities of beer beverages. There is therefore provided a beer beverage comprising 4-vinyl phenol (4VP) and 4-vinyl guaiacol (4VG) in the 4VG:4VP weight ratio of from 2.5 – 10, the overall weight proportion of 4VG and 4VP in the beverage being from 0.11 ppm to 0.56 ppm.

There is further provided a method of conferring desirable beer-taste characteristics on a beer beverage, comprising the addition to the beverage of 4-vinyl phenol (4VP) and 4-vinyl guaiacol (4VG) in the 4VG:4VP weight ratio of from 2.5 – 10, the overall weight proportion of 4VG and 4VP in the beverage being from 0.1 ppm to 0.6 ppm.

4-vinyl phenol

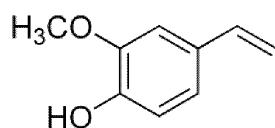
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is a phenolic compound found in wine and beer. It is produced by the action of the yeast *Brettanomyces*, and is said to confer on wine aromas described as "barnyard", "medicinal" and "mousy".

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4-vinyl guaiacol (2-methoxy-4-vinylphenol)



is found in distilled drinks such as whisk(e)y and rum, where it confers sweet, smoky background notes.

- 5 Both have been used in various flavouring applications, including in alcoholic beverages. However, it is not previously been recognized that the use of both together in a particular ratio can contribute desirable beer flavor characteristics, characterized as “malty” and “thick”.
- 10 In a particular embodiment, the weight ratio of 4VG:4VP is from 4-6.

In a further particular embodiment, the overall weight proportion of 4VG and 4VP in the beverage is from 0.11ppm to 0.56ppm, more particularly from 0.22 ppm to 0.28 ppm.

- 15 4VP and 4VG may be added to a beverage by simply adding the compounds either mixed or separate and stirring them in.

The disclosure is further described with reference to the following examples, which depict particular embodiments, and which are not intended to be in any way limiting.

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Examples

Example 1

- 25 A number of different ratios of 4VG and 4VP were added to samples of non-alcoholic beer-tasting drinks. The drinks used were “Kachipla” (ex Amazon Japan) and “Ryoma 1865” (ex Nippon Beer Co., Japan).

- 200g samples of each drink were diluted by addition of 800g carbonated water, providing
30 a carbonated beverage with a malty taste. The proportions of 4VG and 4VP shown in the table below were added.

- The samples were then tested by 4 expert taste panelists in comparison with diluted samples of the drinks that lacked the addition of 4VG and 4VP. The results are shown in
35 the following table.

Sample No.	4VG content (ppm)	4VP content (ppm)	4VG:4VP ratio	Taste characteristics
1	0.2	0	infinity	Slightly malty, medicinal, sour, light
2	0.2	0.005	40	Slightly malty, medicinal, light, sharp
3	0.2	0.01	20	Malty, slightly salty
4	0.2	0.02	10	Malty
5	0.2	0.04	5	Very malty and tasty, thick, body, beer-like, meaty,
6	0.2	0.08	2.5	Very malty, but slightly too heavy
7	0.2	0.2	1	Malty, but too heavy
8	0.1	0.02	5	Light, drinkable, malty, good CO ₂ sensation, slightly sour
9	0.4	0.08	5	Malty, thick, slightly salty
10	0.9	0.16	5	Whiskey-like, medicinal

The desirable characteristics provided by particular quantities and proportions of 4VG and 4VP can clearly be seen.

Example 2

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The Example 1 procedure was repeated with carbonated water. The results, in comparison with an untreated sample of water, were as follows:

Sample No.	4VG content (ppm)	4VP content (ppm)	4VG:4VP ratio	Taste characteristics
11	0.1	0.02	5	light, thin, slightly phenolic
12	0.2	0.04	5	beer-like, meaty, good CO ₂ sensation

13	0.4	0.08	5	medicinal
14	0.8	0.16	5	whiskey-like, medicinal

Again the addition of the appropriate proportions of 4VGT and 4VP provided a desirable beer-like flavour.