(e.g., at least 90%, 95%, 96%, 97%, 98%, 99%, 99.5%, or 99.9% pure). The methods also can provide infinite reproducibility of a recipe, which is not possible with traditional production methods. Further, the methods described herein allow for unique flexibility in optimization of the flavors, aromas, and textures of alcoholic beverages, and greatly reduce or even eliminate the possibility that the resulting beverages will contain detrimental or undesired components. Moreover, the methods disclosed herein differ from currently existing methods in that they are rapid, reproducible, and cost-effective.

Traditional alcoholic beverages are complex mixtures on a chemical level. In some examples, this document provides alcoholic beverage replicas that are less complex than a traditional alcoholic beverage. It was surprising that the replicas disclosed herein, do not need to have the complexity of a traditional alcoholic beverage in order to be perceived as such. It was also surprising that some compounds, which by themselves have an unpleasant taste and/or smell, can enhance the taste and/or smell of the alcoholic beverage replicas disclosed herein. Non-limiting examples of such components include isovaleric acid (which has been associated with foot smell) and butyric acid (which has been associated with the smell of vomit). It was further surprising that the exclusion of some compounds found in all tested traditional alcoholic beverages was not detrimental to the alcoholic beverage replicas described herein. Similarly, it was surprising that some compounds that were not found in any tested traditional alcoholic beverage could be beneficial to the alcoholic beverage replicas described herein. It was also surprising that alcoholic beverage replicas described herein containing some compounds in amounts greater than the highest measured amount in any tested traditional alcoholic beverate or lower than the lowest measured amount in any tested traditional alcoholic beverage were superior to replicas that contained the same compounds in amounts within the measured range of traditional alcoholic beverage. Therefore, in another example, this document provides alcoholic beverage replicas that are not mere replicas of existing products, but instead provide a similar sensory experience with a different chemical composition.

In one aspect, the present disclosure refers to an alcoholic beverage replica comprising:

ethanol;

water; and

one or more additional volatile organic compounds (VOCs), wherein the one or more additional VOCs comprise at least one VOC that is not present in a corresponding traditional alcoholic beverage which is selected from the group consisting of 1-para-menthene-8-thiol, 2-isopropyl-4-methyl thiazole, 3-phenylpropanal, 4,5,6,7-tetrahydro-3,6-dimethylbenzofuran, 5-methyl-2-phenyl-2-hexenal, allyl hexanoate, cis-3-hexenyl valerate, methionyl butyrate, methyl-2-pyrrolyl ketone, omega-pentadecalactone, and phenethyl tiglate.

In another aspect, the present disclosure refers to a method of making an alcoholic beverage replica, the method comprising:

combining ingredients comprising:

water;

ethanol;

five or more additional VOCs, wherein at least five of the five or more additional VOCs are provided as separate ingredients.

In yet another aspect, the present disclosure refers to a method of making a spirit or wine replica concentrate, the method comprising combining:

ethanol;

water; and

one or more additional VOCs, wherein at least one of the one or more additional VOCs is present in a concentration of at least about 2-fold the concentration of the same VOC in a corresponding traditional spirit or wine.

In a further aspect, the present disclosure refers to spirit or wine replica concentrate comprising:

ethanol;

water; and

one or more additional VOCs, wherein at least one of the one or more additional VOCs is present in a concentration of at least about 2-fold the concentration of the same VOC in a corresponding traditional spirit or wine.

In one example, this document features an alcoholic beverage replica that includes ethanol, water, and one or more additional volatile organic compounds (VOCs), where the one or more additional VOCs include at least one VOC that is not present in a

The one or more additional VOCs can have less than 90%, less than 80%, less than 70%, less than 60%, less than 50%, or less than 40% identity to the VOCs in a single corresponding traditional alcoholic beverage.

The alcoholic beverage replica can lack one or more of *Escherichia. coli*, *Salmonella* sp., *Brettanomyces* sp., *Lactobacillales*, *Saccharomyces* sp., *Acremonium strictum*, *Chrysonilia sitophila*, *Cladosporium oxysporum*, *Fusarium oxysporum*, *Mortierella alpina*, *Mucor plumbeus*, *Paecilomyces viridis*, *Penicillium chrysogenum*, *Penicillium citreonigrum*, *Penicillium decumbens*, *Penicillium purpurogenum*, *Trichoderma longibrachiatum*, *Trichoderma viride*, *Verticillium psalliotae*, heavy metal, mold, mildew, rot, insects, insect eggs, insect filth, rodent filth, mammalian excreta, insect lecithins, hydrogen sulfide, hydrogen disulfide, 2,4,6-trichloranisole, 2,4,6,-tribromoanisole, aflatoxin, aldrin, dieldrin, benzene hexachloride, chlordane, dichlorodiphenyltrichloroethane (DDT), dichlorodiphenyldichloroethylene (DDE), dichlorodiphenyldichloroethane (TDE), dimethylnitrosamine (nitrosodimethylamine), ethylene dibromide (EDB), heptachlor, heptachlor epoxide, lindane, mercury, methanol, ethylene glycol, and dichloromethane.

In another example, this document features an alcoholic beverage replica that includes ethanol, water, and one or more non-volatile compounds, where the one or more non-volatile compounds include at least one compound that is not present in a corresponding traditional alcoholic beverage. In some cases, the one or more non-volatile compounds do not include at least one non-volatile compound that is present in a corresponding traditional alcoholic beverage. This document also features an alcoholic beverage replica that includes ethanol, water, and one or more non-volatile compounds, where the one or more non-volatile compounds do not include least one non-volatile compound that is present in a corresponding traditional alcoholic beverage.

The non-volatile compounds can have less than 90%, less than 80%, less than 70%, less than 60%, less than 50%, or less than 40% identity to the non-volatile compounds in a single corresponding traditional alcoholic beverage.

The alcoholic beverage replica can further include one or more additional VOCs. The one or more additional VOCs can include one or more, two or more, three or more,

present disclosure pertains. Although methods and materials similar or equivalent to those described herein can be used to practice the present disclosure, suitable methods and materials are described below. All publications, patent applications, patents, and other references mentioned herein are incorporated by reference in their entirety. In case of conflict, the present specification, including definitions, will control. In addition, the materials, methods, and examples are illustrative only and not intended to be limiting.

The details of one or more examples of the present disclosure are set forth in the description below. Other features, objects, and advantages of the present disclosure will be apparent from the description and from the claims.

DETAILED DESCRIPTION

This document provides alcoholic beverage replicas (including, without limitation, wines such as red wines, white wines, blush wines, and sparkling wines, and spirits such as whiskey, tequila, sake, and rum), as well as methods for making alcoholic beverage replicas by combining water and ethanol with individual VOCs and non-volatile organic compounds. The alcoholic beverage replicas described herein have characteristics – including taste, aroma, mouthfeel, and appearance – of traditionally generated alcoholic beverages, and are meant to be consumed and enjoyed in the same manner as traditional alcoholic beverages. Alcoholic beverage replicas that can be made as described herein include, without limitation, red wines such as Syrah/Shiraz, Merlot, cabernet sauvignon, Malbec, pinot noir, and zinfandel; white wines such as Moscato, pinot grigio, Chardonnay, Sauvignon blanc, and Riesling; blush wines such as white zinfandel, blush Chablis, and red rosé; and spirits such as tequila, whiskey, vodka, gin, sake, baijiu, brandy, soju, and rum.

As used herein, the terms “traditional” and “reference” alcoholic beverages refer to alcoholic beverages produced through standard winemaking (vinification) and distilling processes that include the fermentation of plant matter such as corn, barley, peat, blue agave, and various fruits, including grapes. “Traditionally-produced” alcoholic beverages are alcoholic beverages that are generated using standard processes.

WHAT IS CLAIMED IS:

1. An alcoholic beverage replica comprising:

ethanol;

water; and

one or more additional volatile organic compounds (VOCs), wherein the one or more additional VOCs comprise at least one VOC that is not present in a corresponding traditional alcoholic beverage which is selected from the group consisting of 1-para-menthene-8-thiol, 2-isopropyl-4-methyl thiazole, 3-phenylpropanal, 4,5,6,7-tetrahydro-3,6-dimethylbenzofuran, 5-methyl-2-phenyl-2-hexenal, allyl hexanoate, cis-3-hexenyl valerate, methionyl butyrate, methyl-2-pyrrolyl ketone, omega-pentadecalactone, and phenethyl tiglate.

2. The alcoholic beverage replica of claim 1, wherein the one or more VOCs comprise at least one compound selected from the group consisting of 2-isopropyl-4-methyl thiazole, cis-3-hexenyl valerate, methionyl butyrate, and phenethyl tiglate.

3. The alcoholic beverage replica of claim 1 or claim 2, wherein the one or more VOCs comprise 4,5,6,7-tetrahydro-3,6-dimethylbenzofuran.

4. The alcoholic beverage replica of any one of claims 1 to 3, wherein the one or more VOCs comprise allyl hexanoate.

5. The alcoholic beverage replica of any one of claims 1 to 3, wherein the one or more VOCs comprise methyl-2-pyrrolyl ketone.

6. The alcoholic beverage replica of any one of claims 1 to 5, wherein the one or more VOCs do not comprise at least one VOC that is present in a corresponding alcoholic beverage, and the at least one VOC that is present in a corresponding traditional alcoholic beverage is selected from the group consisting of 2,4,6-trimethylphenol (mesitol), 5-ethyl-3-hydroxy-4-methyl-2(5H)-furanone (maple furanone), 6-methyl-5-hepten-2-one, b-caryophellene, cis-2-hexenol, hexadecanol, methyl cyclopentenolone, nonanoic acid, and terpinolene.

7. The alcoholic beverage replica of any one of claims 1 to 6, wherein the one or more additional VOCs comprise:

an ester;

an alcohol;

optionally, an acid;

optionally, an aldehyde, a ketone, or an aldehyde and a ketone;

optionally, a terpene, an isoprenoid, or a terpene and an isoprenoid;

optionally, a phenol;

optionally, a lactone;

optionally, an amine, a pyrazine, or an amine and a pyrazine;

optionally, a thiol, a thiazole, a sulfide, or any combination thereof;

optionally, an ether;

optionally, an acetal; and

optionally, a furan.

8. The alcoholic beverage replica of any one of claims 1 to 7, wherein the one or more additional VOCs comprise one or more esters.

9. The alcoholic beverage replica of claim 8, wherein the one or more esters are selected from the group consisting of 2-methylbutyl acetate, 2-methylbutyl isovalerate, 2-phenylethylacetate, amyl butyrate, benzyl acetate, butyl acetate, butyl formate, butyl isovalerate, cis-3-hexenyl acetate, diethyl malate, diethyl succinate, dimethyl anthranilate, ethyl 3-hydroxyhexanoate, ethyl acetate, ethyl anthranilate, ethyl benzoate, ethyl butanoate, ethyl cinnamate, ethyl decanoate, ethyl heptanoate, ethyl hexanoate, ethyl isobutyrate, ethyl isovalerate, ethyl lactate, ethyl laurate, ethyl levulinate, ethyl myristate, ethyl nonanoate, ethyl octanoate, ethyl palmitate, ethyl phenyl acetate, ethyl propionate, ethyl salicylate, ethyl undecanoate, ethyl valerate, ethyl(methylthio) acetate, ethyl-2-mercaptopropionate, ethyl-2-methylbutyrate, ethyl-3-hydroxybutyrate, ethyl-trans-2-butenoate, ethyl-trans-3-hexenoate, geranyl acetate, heptyl acetate, hexyl acetate, hexyl hexanoate, isoamyl acetate, isoamyl hexanoate, isoamyl isobutyrate, isoamyl isovalerate, isoamyl octanoate, isobutyl acetate, linalyl acetate, linalyl butyrate, linalyl

formate, methyl acetate, methyl anthranilate, methyl decanoate, methyl dihydrojasmonate, methyl hexanoate, methyl laurate, methyl octanoate, methyl salicylate, methyl vanillate, octyl acetate, phenethyl acetate, phenethyl butyrate, phenethyl formate, phenethyl isobutyrate, phenethyl octanoate, phenethyl propionate, propyl acetate, propyl butyrate, propyl hexanoate, and mixtures thereof.

10. The alcoholic beverage replica of claim 8 or claim 9, wherein the one or more esters are present in a total amount of about 0.009 mg/L to about 1.5 g/L.

11. The alcoholic beverage replica of any one of claims 1 to 10, wherein the one or more additional VOCs comprise one or more acids.

12. The alcoholic beverage replica of claim 11, wherein the one or more acids are selected from the group consisting of 3,7-dimethyl-6-octanoic acid, 3,7-dimethyl-6-octenoic acid, butyric acid, decanoic acid, hexanoic acid, isobutyric acid, isovaleric acid, nonanoic acid, octanoic acid, propanoic acid, and mixtures thereof.

13. The alcoholic beverage replica of claim 11 or claim 12, wherein the one or more acids are present in a total amount of about 0.03 mg/L to about 325 mg/L.

14. The alcoholic beverage replica of any one of claims 1 to 13, wherein the one or more additional VOCs comprise one or more alcohols.

15. The alcoholic beverage replica of claim 14, wherein the one or more alcohols are selected from the group consisting of 1-decanol, 1-octanol, 1-octen-3-ol, 2-(methylthio)ethanol, 2-methyl-1-butanol, 2-phenylethanol, 3-(methylthio)-1-propanol, 3-methyl-1-pentanol, amyl alcohol, benzyl alcohol, butanol, cis-2-hexenol, cis-3-hexen-1-ol, DL-3-methyl-2-butanol, hexadecanol, hexanol, isoamyl alcohol, isobutanol, propanol, trans-2-hexen-1-ol, and mixtures thereof.

16. The alcoholic beverage replica of any one of claims 13 to 15, wherein the one or more alcohols are present in a total amount of about 0.08 mg/L to about 4.5 mg/L.

17. The alcoholic beverage replica of any one of claims 1 to 16, wherein the one or more additional VOCs comprise one or more aldehydes or ketones.

18. The alcoholic beverage replica of claim 17, wherein the one or more aldehydes or ketones are selected from the group consisting of 2,3-pentadione, 2-heptanone, 2-methylbutyraldehyde, 2-nonanone, 2-undecanone, 3-nonen-2-one, 5-ethyl-3-hydroxy-4-methyl-2(5H)-furanone (maple furanone), 5-methyl furfural, 6-methyl-5-hepten-2-one, acetaldehyde, acetoin, acetophenone, benzaldehyde, cinnamaldehyde, damascenone, diacetyl, furfural, isobutyraldehyde , isovaleraldehyde, maltol, methional, methyl cyclopentenolone, methyl β-naphthyl ketone, nonanal, p-anisaldehyde, phenylacetaldehyde, salicylaldehyde, trans-2-heptenal, trans-2-hexen-1-al, trans-2-pentenal, valeraldehyde, and mixtures thereof.

19. The alcoholic beverage replica of claim 17 or claim 18, wherein the one or more aldehydes or ketones are present in a total amount of about 0.02 mg/L to about 14 mg/L.

20. The alcoholic beverage replica of any one of claims 1 to 19, wherein the one or more additional VOCs comprise one or more terpenes or isoprenoids.

21. The alcoholic beverage of claim 20, wherein the one or more terpenes or isoprenoids are selected from the group consisting of (-)alpha-pinene, (-)cis-rose-oxide, 3-carene, 4-carvomenthenol, 4-ethylguaiacol, a-ionone, a-phellandrene, a-terpineol, b-caryophellene, beta pinene, beta-ionone, carvone, citral, citronellol, D-camphor, eucalyptol, farnesol, gamma-terpinene, geraniol, geranyl acetone, isoborneol, limonene, linalool, linalool oxide, myrcene, myrtenol, nerol, nerolidol, p,a-dimethylstyrene, p-cymene, terpinolene, and mixtures thereof.

22. The alcoholic beverage replica of claim 20 or claim 21, wherein the one or more terpenes or isoprenoids are present in a total amount of about 0.0002 mg/L to about 95 mg/L.

23. The alcoholic beverage replica of any one of claims 1 to 22, wherein the one or more additional VOCs comprise one or more phenols.

24. The alcoholic beverage replica of claim 23, wherein the one or more phenols are selected from the group consisting of 2,4,6-trimethylphenol (mesitol), 2-methoxy-4-methylphenol, 2-methoxy-4-propyl-phenol, 4-ethylphenol, eugenol, guaiacol, p-cresol, and mixtures thereof.

25. The alcoholic beverage replica of claim 23 or claim 24, wherein the one or more phenols are present in a total amount of about 0.00007 mg/L to about 5 mg/L.

26. The alcoholic beverage replica of any one of claims 1 to 25, wherein the one or more additional VOCs comprise one or more lactones.

27. The alcoholic beverage replica of claim 26, wherein the one or more lactones are selected from the group consisting of delta-decalactone, gamma-decalactone, gamma-hexalactone, gamma-nonalactone, gamma-octalactone, gamma-undecalactone, Jasmine lactone, whiskey lactone, and mixtures thereof.

28. The alcoholic beverage replica of claim 26 or claim 27, wherein the one or more lactones are present in a total amount of about 0.00007 mg/L to about 10 mg/L.

29. The alcoholic beverage replica of any one of claims 1 to 28, wherein the one or more additional VOCs comprise one or more amines or pyrazines.

30. The alcoholic beverage replica of claim 29, wherein the one or more amines or pyrazines are selected from the group consisting of 2-acetylpyridine, 2-isobutyl-3-methoxypyrazine, 2-isopropyl-3-methoxypyrazine, and mixtures thereof.

31. The alcoholic beverage replica of claim 29 or claim 30, wherein the one or more amines or pyrazines are present in a total amount of about 0.00007 mg/L to about 0.09 mg/L.

32. The alcoholic beverage replica of any one of claims 1 to 31, wherein the one or more additional VOCs comprise one or more thiols, thiazoles, or sulfides.

33. The alcoholic beverage replica of claim 31 or claim 32, wherein the one or more thiols, thiazoles, or sulfides are selected from the group consisting of 3-mercaptohexylacetate, dimethyl sulfide, furfuryl mercaptan, and mixtures thereof.

34. The alcoholic beverage replica any one of claims 31 to 33, wherein the one or more thiols, thiazoles, or sulfides are present in a total amount of about 0.00007 mg/L to about 0.45 mg/L.

35. The alcoholic beverage replica of any one of claims 1 to 34, wherein the one or more additional VOCs comprise one or more ethers.

36. The alcoholic beverage replica of claim 35, wherein the one or more ethers comprise vanillyl ethyl ether.

37. The alcoholic beverage replica of claim 35 or claim 36, wherein the one or more ethers are present in a total amount of about 0.01 to about 0.05 mg/L.

38. The alcoholic beverage replica of any one of claims 1 to 37, wherein the one or more additional VOCs comprise one or more acetals.

39. The alcoholic beverage replica of claim 38, wherein the one or more acetals are selected from the group consisting of acetal, acetaldehyde diethyl acetal, phenethyl acetaldehyde dimethyl acetal, and mixtures thereof.

40. The alcoholic beverage replica of claim 38 or claim 39, wherein the one or more acetals are present in an amount of about 0.15 mg/L to about 28 mg/L.

41. The alcoholic beverage replica of any one of claims 1 to 40, wherein the one or more additional VOCs comprise one or more furans.

42. The alcoholic beverage replica of claim 41, wherein the one or more furans comprise 2-pentyl furan.

43. The alcoholic beverage replica of any one of claims 1 to 42, wherein the one or more additional VOCs comprise at least 5 compounds selected from the group consisting of 1-decanol, 1-octanol, 1-octen-3-ol, 2,3-pentadione, 2,4,6-trimethylphenol (mesitol), 2-heptanone, 2-isopropyl-3-methoxypyrazine, 2-methyl-1-butanol, 2-methylbutyl acetate, 2-methylbutyraldehyde, 2-phenylethanol, 2-phenylethylacetate, 2-undecanone, 3-(methylthio)-1-propanol, 3,7-dimethyl-6-octanoic acid, 3,7-dimethyl-6-octenoic acid, 3-methyl-1-pentanol, 4-carvomenthenol, 4-ethylguaiacol, 4-ethylphenol, 5-ethyl-3-hydroxy-4-methyl-2(5H)-furanone (maple furanone), 5-methyl furfural, 6-methyl-5-hepten-2-one, acetal, acetaldehyde, acetaldehyde, diethyl acetal, acetophenone, amyl alcohol, a-phellandrene, a-terpineol, b-caryophellene, benzaldehyde, beta pinene, butanol, butyl acetate, butyl formate, butyric acid, cinnamaldehyde, cis-2-hexenol, citral, citronellol, damascenone, D-camphor, decanoic acid, delta-decalactone, diacetyl, diethyl malate, diethyl succinate, dimethyl anthranilate, dimethyl sulfide, DL-3-methyl-2-butanol, ethyl 3-hydroxyhexanoate, ethyl acetate, ethyl anthranilate, ethyl benzoate, ethyl butanoate, ethyl cinnamate, ethyl decanoate, ethyl heptanoate, ethyl hexanoate, ethyl isobutyrate, ethyl isovalerate, ethyl lactate, ethyl laurate, ethyl levulinate, ethyl myristate, ethyl nonanoate, ethyl octanoate, ethyl palmitate, ethyl phenyl acetate, ethyl propionate, ethyl undecanoate, ethyl valerate, ethyl-2-methylbutyrate, ethyl-3-hydroxybutyrate, eugenol, farnesol, furfural, gamma-decalactone, gamma-hexalactone, gamma-nonalactone, gamma-octalactone, geraniol, geranyl acetone, guaiacol, hexadecanol, hexanol, hexyl hexanoate, isoamyl acetate, isoamyl alcohol, isoamyl octanoate, isobutanol, isobutyl acetate, isobutyraldehyde, isobutyric acid, isovaleraldehyde, isovaleric acid, limonene, linalool, linalool oxide, linalyl acetate, maltol, methional, methyl acetate, methyl anthranilate, methyl cyclopentenolone, methyl decanoate, methyl hexanoate, methyl laurate, methyl salicylate, methyl β-naphthyl ketone, myrtenol, nerol, nerolidol, nonanoic acid, octanoic acid, p,a-dimethylstyrene, p-cymene, phenethyl acetate, phenethyl formate, phenethyl isobutyrate, phenethyl octanoate, phenethyl propionate, phenylacetaldehyde, propanoic acid, propanol, propyl acetate, propyl butyrate, salicylaldehyde, terpinolene, trans-2-heptenal, trans-2-hexen-1-al, trans-2-hexen-1-ol, trans-2-pentenal, vanillyl ethyl ether, and whiskey lactone.

44. The alcoholic beverage replica of any one of claims 1 to 43, wherein the one or more additional VOCs comprise at least 1 compound selected from the group consisting of (-)alpha-pinene, (-)cis-rose-oxide, 2-(methylthio)ethanol, 2-acetylpyridine, 2-isobutyl-3-methoxypyrazine, 2-methoxy-4-methylphenol, 2-methoxy-4-propyl-phenol, 2-methylbutyl isovalerate, 2-nonanone, 3-carene, 3-mercaptohexylacetate, 3-nonen-2-one, acetoin, a-ionone, amyl butyrate, benzyl acetate, benzyl alcohol, beta-ionone, butyl isovalerate, carvone, cis-3-hexen-1-ol, cis-3-hexenyl acetate, ethyl salicylate, ethyl(methylthio) acetate, ethyl-2-mercaptopropionate, ethyl-trans-2-butenoate, ethyl-trans-3-hexenoate, eucalyptol, furfuryl mercaptan, gamma-terpinene, gamma-undecalactone, geranyl acetate, heptyl acetate, hexanoic acid, hexyl acetate, isoamyl hexanoate, isoamyl isobutyrate, isoamyl isovalerate, isoborneol, jasmine lactone, linalyl butyrate, linalyl formate, methyl dihydrojasmonate, methyl octanoate, methyl vanillate, myrcene, nonanal, octyl acetate, p-anisaldehyde, p-cresol, phenethyl acetaldehyde dimethyl acetal, phenethyl butyrate, propyl hexanoate, valeraldehyde.

45. The alcoholic beverage replica of any one of claims 1 to 44, further comprising one or more non-volatile compounds.

46. The alcoholic beverage replica of claim 45, wherein the one or more non-volatile compounds comprise one or more non-volatile compounds that are not present in a corresponding traditional alcoholic beverage.

47. The alcoholic beverage replica of claim 46, wherein the one or more non-volatile compounds that are not present in a traditional alcoholic beverage are selected from the group consisting of cysteine, cystine, epicatechin gallate, methyl 2-pyrrolyl ketone, and rutin.

48. The alcoholic beverage replica of any one of claims 45 to 47, wherein the one or more non-volatile compounds do not comprise one or more non-volatile compounds that are present in a corresponding traditional alcoholic beverage.

49. The alcoholic beverage replica of claim 48, wherein the one or more non-volatile compounds that are present in a corresponding traditional alcoholic beverage are selected from the group consisting of 4-guanidinobutyric acid, adenine, cytidine, cytosine, homoserine, and uracil.

50. The alcoholic beverage of any one of claims 45 to 49, wherein the one or more non-volatile compounds comprise at least 5 compounds selected from the group consisting of 2,3,5,6-tetramethylpyrazine, 2,3,5-trimethylpyrazine, 2,3-dimethylpyrazine, 2-isopropylmalic acid, 3,4-dihydroxybenzoic acid, 4-guanidinobutyric acid, acetic acid, acetovanillone, adenine, adipic acid, alanine, arabitol, arginine, aspartic acid, betaine, caffeic acid, camphoric acid, carnitine, catechin, choline, citric acid, citrulline, coumaric acid, cytidine, cytosine, D-glucuronic acid, disodium 5' ribonucleotides (5'-guanylate & 5'-inosinate), ellagic acid, epicatechin, fructose, fucose, fumaric acid, GABA, galactose, gallic acid, glucose, glutamic acid, guanine, histidine, homoserine, kynurenic acid, lactic acid, lysine, malic acid, mannitol, methionine, methyl gallate, monosodium glutamate, inositol, phenylalanine, pipecolinic acid, proline, propyl gallate, pyridine, pyridoxine, pyruvic acid, quercetin, quinic acid, rhamnose, ribose, salicylic acid, serine, sorbitol, succinic acid, syringaldehyde, tartaric acid, trans-4-hydroxyproline, trans-ferulic acid, uracil, vanillic acid, and vanillin.

51. The alcoholic beverage replica of any one of claims 45 to 50, wherein the one or more non-volatile compounds comprise at least 1 compound selected from the group consisting of 2-furoic acid, asparagine, beta-alanine, carnosine, cinnamic acid, D-gluconolactone (gluconic acid), glucosamine, glutamine, glycerol, glycine, hesperetin, isoleucine, leucine, mannose, ornithine, pantothenic acid, piperine, polydatin, resveratrol, sinapinic acid, sorbic acid, a surfactant, syringic acid, threonine, tryptamine, tryptophan, tyramine, tyrosine, valine, and xylose.

52. The alcoholic beverage replica of any one of claims 45 to 51, wherein the non-volatile compounds comprise one or more compounds selected from the group consisting of a surfactant, gum arabic, and pectin.

53. A method of making an alcoholic beverage replica, the method comprising:

combining ingredients comprising:

water;

ethanol;

five or more additional VOCs, wherein at least five of the five or more additional VOCs are provided as separate ingredients.

54. The method of claim 53, comprising 10 or more additional VOCs, wherein at least 10 of the 10 or more additional VOCs are provided as separate ingredients.

55. The method of claim 53 or claim 54, wherein the ingredients further comprise a non-volatile compound, and wherein the non-volatile compound is a sugar or a sugar alcohol, an acid, a pH-modifying salt, a nucleotide monophosphate, an amino acid, or a combination thereof.

56. The method of claim 55, wherein the acid comprises tartaric acid, malic acid, citric acid, succinic acid, lactic acid, acetic acid, or a combinations thereof.

57. The method of claim 55or claim 56, wherein the sugar or sugar alcohol comprises glycerol, glucose, fructose, sorbitol, inositol, mannose, mannitol, or a combination thereof.

58. The method of any one of claims 55 to 57, wherein the non-volatile compound comprises at least one non-volatile compound that is not present in a corresponding traditional alcoholic beverage.

59. The method of any one of claims 55 to 58, wherein the non-volatile compound does not comprise at least one non-volatile compound that is present in a corresponding traditional alcoholic beverage.

60. The method of any one of claims 53 to 59, wherein the one or more additional VOCs comprise at least one VOC that is not present in a corresponding traditional alcoholic beverage.

61. The method of any one of claims 53 to 60, wherein the one or more additional VOCs do not comprise at least one VOC that is present in a corresponding traditional alcoholic beverage.

62. A method of making a spirit or wine replica concentrate, the method comprising combining:

ethanol;

water; and

one or more additional VOCs, wherein at least one of the one or more additional VOCs is present in a concentration of at least about 2-fold the concentration of the same VOC in a corresponding traditional spirit or wine.

63. The method of claim 62, wherein the one or more additional VOCs comprise at least one VOC that is not present in a corresponding traditional spirit or wine, and/or wherein the one or more additional VOCs do not comprise at least one VOC that is present in a corresponding traditional spirit or wine.

64. The method of claim 62 or claim 63, wherein the spirit or wine replica concentrate further comprises one or more non-volatile compounds, wherein the one or more non-volatile compounds comprise at least one non-volatile compound that is not present in a corresponding traditional spirit or wine, and/or wherein the one or more non-volatile compounds do not comprise at least one non-volatile compound that is present in a corresponding traditional spirit or wine.

65. A spirit or wine replica concentrate comprising:

ethanol;

water; and

one or more additional VOCs, wherein at least one of the one or more additional VOCs is present in a concentration of at least about 2-fold the concentration of the same VOC in a corresponding traditional spirit or wine.

66. The spirit or wine replica concentrate of claim 65, wherein the one or more additional VOCs comprise at least one VOC that is not present in a corresponding traditional spirit or wine, and/or wherein the one or more additional VOCs do not comprise at least one VOC that is present in a corresponding traditional spirit or wine.

67. The spirit or wine replica concentrate of claim 65 or claim 66, wherein the spirit or wine replica concentrate further comprises one or more non-volatile compounds, wherein the one or more non-volatile compounds comprise at least one non-volatile compound that is not present in a corresponding traditional spirit or wine, and/or wherein the one or more non-volatile compounds do not comprise at least one non-volatile compound that is present in a corresponding traditional spirit or wine.