

CLAIMS

1. A method of delivering nicotine to a user, the method comprising:
 - (i) heating a nicotine liquid formulation in an electronic cigarette to produce an inhalable aerosol, wherein the nicotine liquid formulation comprises nicotine and an organic acid in a biologically acceptable liquid carrier, and
 - (ii) the user inhaling the aerosol, wherein an amount of the organic acid contained in the aerosol is sufficient to increase the user's heart rate after the inhalation relative to without the organic acid.
2. The method according to claim 1, wherein the organic acid is a carboxylic acid.
3. The method according to claim 1, wherein the organic acid is a monocarboxylic acid, an aromatic acid, or a keto acid.
4. The method according to claim 1, wherein the organic acid is formic acid, acetic acid, propionic acid, butyric acid, isovaleric acid, hexanoic acid, citric acid, myristic acid, phenylacetic acid, benzoic acid, pyruvic acid, levulinic acid, tartaric acid, lactic acid, malonic acid, succinic acid, fumaric acid, or malic acid.
5. The method according to claim 1, wherein the organic acid is benzoic acid.
6. The method according to claim 1, wherein the organic acid is pyruvic acid.
7. The method according to claim 1, wherein the organic acid is lactic acid.
8. The method according to claim 1, wherein the organic acid is levulinic acid.
9. The method according to any one of claims 1 to 8, wherein the liquid carrier comprises glycerol, propylene glycol, 1,3-propanediol, water, ethanol, or a combination thereof.



10. The method according to any one of claims 1 to 9, wherein the liquid carrier comprises propylene glycol and glycerol.

11. The method according to any one of claims 1 to 10, wherein the nicotine liquid formulation has a nicotine concentration of approximately 0.5% (w/w) to approximately 20% (w/w).

12. The method according to any one of claims 1 to 11, wherein the nicotine liquid formulation has a nicotine concentration of approximately 1% (w/w) to approximately 18% (w/w).

13. The method according to any one of claims 1 to 12, wherein the nicotine liquid formulation has a nicotine concentration of approximately 3% (w/w) to approximately 15% (w/w).

14. The method according to any one of claims 1 to 13, wherein the nicotine liquid formulation has a nicotine concentration of approximately 4% (w/w) to approximately 12% (w/w).

15. The method according to any one of claims 1 to 14, wherein the nicotine liquid formulation has a nicotine concentration of approximately 4% (w/w).

16. The method according to any one of claims 1 to 15, wherein the nicotine liquid formulation further comprises a flavoring.

17. The method according to any one of claims 1 to 16, wherein the nicotine liquid formulation further comprises one or more additional organic acids.

18. A nicotine liquid formulation for use in an electronic cigarette, the nicotine liquid formulation comprising nicotine and an organic acid, the nicotine liquid formulation being for producing an inhalable aerosol when heated in the electronic cigarette, wherein an amount of the



organic acid contained in the aerosol is sufficient to increase the heart rate of a user after the user inhales the aerosol relative to without the organic acid.

19. The nicotine liquid formulation for use in an electronic cigarette according to claim 18, wherein the organic acid is a carboxylic acid.

20. The nicotine liquid formulation for use in an electronic cigarette according to claim 18, wherein the organic acid is a monocarboxylic acid, an aromatic acid, or a keto acid.

21. The nicotine liquid formulation for use in an electronic cigarette according to claim 18, wherein the organic acid is formic acid, acetic acid, propionic acid, butyric acid, isovaleric acid, hexanoic acid, citric acid, myristic acid, phenylacetic acid, benzoic acid, pyruvic acid, levulinic acid, tartaric acid, lactic acid, malonic acid, succinic acid, fumaric acid, or malic acid.

22. The nicotine liquid formulation for use in an electronic cigarette according to claim 18, wherein the organic acid is benzoic acid.

23. The nicotine liquid formulation for use in an electronic cigarette according to claim 18, wherein the organic acid is pyruvic acid.

24. The nicotine liquid formulation for use in an electronic cigarette according to claim 18, wherein the organic acid is lactic acid.

25. The nicotine liquid formulation for use in an electronic cigarette according to claim 18, wherein the organic acid is levulinic acid.

26. The nicotine liquid formulation for use in an electronic cigarette according to any one of claims 18 to 25, wherein the liquid carrier comprises glycerol, propylene glycol, 1,3-propanediol, water, ethanol, or a combination thereof.



27. The nicotine liquid formulation for use in an electronic cigarette according to any one of claims 18 to 26, wherein the liquid carrier comprises propylene glycol and glycerol.

28. The nicotine liquid formulation for use in an electronic cigarette according to any one of claims 18 to 27, wherein the nicotine liquid formulation has a nicotine concentration of approximately 0.5% (w/w) to approximately 20% (w/w).

29. The nicotine liquid formulation for use in an electronic cigarette according to any one of claims 18 to 28, wherein the nicotine liquid formulation has a nicotine concentration of approximately 1% (w/w) to approximately 18% (w/w).

30. The nicotine liquid formulation for use in an electronic cigarette according to any one of claims 18 to 29, wherein the nicotine liquid formulation has a nicotine concentration of approximately 3% (w/w) to approximately 15% (w/w).

31. The nicotine liquid formulation for use in an electronic cigarette according to any one of claims 18 to 30, wherein the nicotine liquid formulation has a nicotine concentration of approximately 4% (w/w) to approximately 12% (w/w).

32. The nicotine liquid formulation for use in an electronic cigarette according to any one of claims 18 to 31, wherein the nicotine liquid formulation has a nicotine concentration of approximately 4% (w/w).

33. The nicotine liquid formulation for use in an electronic cigarette according to any one of claims 18 to 32, wherein the nicotine liquid formulation further comprises a flavoring.

34. The nicotine liquid formulation for use in an electronic cigarette according to any one of claims 18 to 33, wherein the nicotine liquid formulation further comprises one or more additional organic acids.