CLAIMS

1. A method for inducing NAD+ synthesis in a subject, said method comprising:
administering to the subject a pharmaceutical composition comprising a therapeutically effective amount of resveratrol or a functionally equivalent analogue or derivative thereof; and
retaining the pharmaceutical composition in the subject's mouth so that absorption of the resveratrol occurs though the subject's buccal/sublingual membranes, thereby by-passing first pass metabolism by the liver.

2. A method of claim 1 wherein the pharmaceutical composition is provided as a gel based confectionary, which is adapted to be at least partially dissolved in the subject's mouth cavity such that the resveratrol is absorbed through the subject's buccal/sublingual membranes.

3. A method of claim 1 or claim 2 wherein the pharmaceutical composition is retained in the subject's mouth for a minimum time of about 5 min.

4. A method of claim 3 wherein the pharmaceutical composition is retained in the subject's mouth for about 5 min before completely dissolving.

5. A method of claim 2 wherein the pharmaceutical composition comprises corn syrup, sugar, fruit juice concentrate, citric acid, flavours, colours, carnauba wax, resveratrol and one or more of gelatine, carrageenan, xanthan, pectin or gellan gum.

6. A method of claim 5 wherein the one or more of gelatine, carrageenan, xanthan, pectin or gellan gum is present in a

concentration sufficient that the pharmaceutical composition maintains its structure when the mixture of ingredients is dried.

7. A method of claim 5 wherein the resveratrol is mixed with the fruit juice concentrate to form a slurry prior to being added to the mixture.

8. A method of any one of claims 1 to 8 where the resveratrol is in an amount from 0.4% to 5% of finished product weight, thereby providing a resveratrol dosage range of between 20-250mg/5g level.

9. A method of claim 1 wherein the pharmaceutical composition is provided as a chewing gum, which is adapted to be chewed by the subject such that the resveratrol is absorbed through the subject's buccal/sublingual membranes.

10. A method of claim 9 wherein the pharmaceutical composition comprises a gum base (15-25%), a sugar or sugar alternative (50-70%), corn or glucose syrup (15-25%), flavouring (1-5%) and resveratrol (0.6-2.0%).

11. A method of claim 10 wherein the pharmaceutical composition comprises a gum base (about 20%), a 30:1 (sugar/resveratrol) mix (about 62%), corn syrup (about 15%) and flavouring (about 1%).

12. A method of claim 11 wherein the ingredients are mixed together at a temperature of between 75°C to 80°C.

13. A method of claim 12 wherein the ingredients are mixed together at a temperature of about 80°C.

14. A method of claim 1 whereby the subject's NAD level increases by between 30% and 50% within about 60min of administration of the pharmaceutical composition.

15. A method of claim 14 whereby the subject's NAD level increases by between 35% and 45% within about 60min of administration of the pharmaceutical composition.

16. A method of claim 15 whereby the subject's NAD level increases by 41% within about 60min of administration of the pharmaceutical composition.

17. A method of claim 1 whereby the subject's raised NAD level remains between 30% and 40% above the baseline NAD level for between 1 and 4 hours and decreases at a rate of 1 ng/mL/hr to 3 ng/mL/hr.

18. A method of claim 17 whereby the subject's raised NAD level remains 35% above the baseline NAD level for 4 hours and decreases at a rate of 2 ng/mL/hr.

19. A method for the treatment of a disease or condition associated with either reduced NAD+ synthesis and/or increased NAD catabolism (usage) or increased requirement for NAD+ comprising:
administering to a subject a pharmaceutical composition comprising a therapeutically effective amount of resveratrol or a functionally equivalent analogue or derivative thereof; and
retaining the pharmaceutical composition in the subject's mouth so that absorption of the resveratrol occurs though the subject's buccal/sublingual membranes, thereby by-passing first pass metabolism by the liver.

20. A pharmaceutical composition when used to induce NAD+ synthesis in a subject, the composition comprising:
a therapeutically effective amount of resveratrol or a functionally equivalent analogue or derivative thereof;

whereby absorption of the resveratrol occurs though the subject's buccal/sublingual membranes, thereby by-passing first pass metabolism by the liver.

21. A pharmaceutical composition for administering a therapeutically effective amount of resveratrol or a functionally equivalent analogue or derivative thereof to a subject characterised in that absorption of the resveratrol occurs though the subject's buccal/sublingual membranes, thereby by-passing first pass metabolism by the liver; wherein the subject's NAD level increases by between 30% and 50% within about 60min of administration of the composition.

22. A pharmaceutical composition for administering a therapeutically effective amount of resveratrol or a functionally equivalent analogue or derivative thereof to a subject characterised in that absorption of the resveratrol occurs though the subject's buccal/sublingual membranes, thereby by-passing first pass metabolism by the liver; wherein the subject's raised NAD level remains between 30% and 40% above the baseline NAD level for between 1 and 4 hours and decreases at a rate of 1 ng/mL/hr to 3 ng/mL/hr.

* * * * * * *

CLAIMS

1. A pharmaceutical composition for administering a therapeutically effective amount of resveratrol or a functionally equivalent analogue or derivative thereof to a subject characterised in that the absorption of resveratrol occurs through the subject's buccal/sublingual membranes, thereby by-passing first pass metabolism by the liver.

2. A pharmaceutical composition of claim 1 wherein the resveratrol is provided in a gel based confectionery, which is adapted to be at least partially dissolved in the subject's mouth cavity such that the resveratrol is absorbed through the subject's buccal/sublingual membranes.

3. A pharmaceutical composition of claim 2 which provides a minimum dosage administration time of about 5 min to allow the resveratrol to be effectively absorbed across the buccal/sublingual membranes.

4. A pharmaceutical composition of claim 3 which is adapted to remain in the subject's mouth cavity for about 5 min before completely dissolving.

5. A pharmaceutical composition of claim 2 comprising corn syrup, sugar, fruit juice concentrate, citric acid, flavours, colours, carnauba wax, resveratrol and one or more of gelatine, carrageenan, xanthan, pectin or gellan gum.

6. A pharmaceutical composition of claim 3 wherein the one or more of gelatine, carrageenan, xanthan, pectin or gellan gum is present in a concentration sufficient that the pharmaceutical composition maintains its structure when the mixture of ingredients is dried.

7. A pharmaceutical composition of claim 2 wherein the resveratrol is in an amount from 0.4% to 5% of finished product weight, thereby providing a resveratrol dosage range of between 20-250mg/5g level.

8. A pharmaceutical composition of claim 3 wherein the resveratrol is mixed with the fruit juice concentrate to form a slurry prior to being added to the mixture.

9. A pharmaceutical composition of claim 1 wherein the resveratrol is provided in a chewing gum, which is adapted to be chewed by the subject so that the resveratrol is absorbed through the subject's buccal/sublingual membranes.

10. A pharmaceutical composition of claim 9 comprising a gum base (15 - 25%), a sugar or sugar alternative (50 – 70%), corn or glucose syrup (15 – 25%), flavouring (1 – 5%) and resveratrol (0.6 – 2.0%).

11. A pharmaceutical composition of claim 10 comprising a gum base (about 20%), a 30:1 (sugar/resveratrol) mix (about 62%), corn syrup (about 15%) and flavouring (about 1%).

12. A pharmaceutical composition of claim 11 wherein the ingredients are mixed together at a temperature of between 75°C to 80°C.

13. A pharmaceutical composition of claim 12 wherein the ingredients are mixed together at a temperature about 80°C.

14. A pharmaceutical composition of claim 1 wherein the subject's NAD level increases by between 30% and 50% within about 60min of administration of the composition.

15. A pharmaceutical composition of claim 12 wherein the subject's NAD level increases by between 35% and 45% within about 60min of administration of the composition.

16. A pharmaceutical composition of claim 15 wherein the subject's NAD level increases by 41% within about 60min of administration of the composition.

17. A pharmaceutical composition of claim 1 wherein the subject's raised NAD level remains between 30% and 40% above the baseline NAD level for between 1 and 4 hours and decreases at a rate of 1 ng/mL/hr to 3 ng/mL/hr.

18. A pharmaceutical composition of claim 17 wherein the subject's raised NAD level remains 35% above the baseline NAD level for 4hrs and decreases at a rate of 2 ng/mL/hr.

19. A method for the treatment of a disease or condition associated with either reduced NAD+ synthesis and/or increased NAD catabolism (usage) or increased requirement for NAD+, such as DNA damage by upregulation of nicotinamide mononucleotide adenylyl transferase (NMNAT) activity by administering to a subject a pharmaceutical composition according to any of claims 1 to 7.

* * * * * * *