[0008] Applicants have determined that particular mixtures of rhamnolipid salts can meet the above objectives while also advancing UN Sustainability Goals (“SDG”). The rhamnolipid salt mixtures of the present technology contribute to better health and well-being by delivering equal or better efficacy in the treatment of wounds. The rhamnolipid salt mixtures are advantageously bio-based, renewably sourced actives obtained from a bacterial fermentation process that generates biodegradable waste products that are less impactful on the environment. These benefits further SDG #3 (Good Health and Well-being) and SDG #12 (Responsible Consumption and Production).

SUMMARY

[0008a] In one aspect, there is provided the use of a composition in a manufacture of a medicament for treating a wound, the composition comprising:

(a) a mixture of rhamnolipids, wherein the mixture of rhamnolipids comprises:

mono-rhamnolipids and di-rhamnolipids in a weight ratio of about 40:60 to about 60:40 mono-rhamnolipids:di-rhamnolipids;

an amount of C10-C10 mono-rhamnolipid of about 29% to about 40% by weight, based on the total weight of rhamnolipids present in the composition;

an amount of C10-C10 di-rhamnolipid of about 35% to about 50% by weight, based on the total weight of rhamnolipids present in the composition;

an amount of C8-C10 mono-rhamnolipid of about 2% to about 5% by weight, based on the total weight of rhamnolipids present in the composition;

an amount of C8-C10 di-rhamnolipid of about 2% to about 5% by weight, based on the total weight of rhamnolipids present in the composition;

an amount of C10-C12 mono-rhamnolipid of about 2% to about 6% by weight, based on the total weight of rhamnolipids present in the composition; and

an amount of C10-C12 di-rhamnolipid of about 8% to about 14% by weight, based on the total weight of rhamnolipids present in the composition;

(b) at least one acceptable carrier, and optionally one or more additives, in an amount to total 100% by weight of the composition.

[0008b] In another aspect, the present disclosure refers to a wound care composition, comprising:

(a) a mixture of rhamnolipids, wherein the mixture of rhamnolipids comprises:

mono-rhamnolipids and di-rhamnolipids in a weight ratio of about 40:60 to about 50:50 mono-rhamnolipids:di-rhamnolipids;

an amount of C10-C10 mono-rhamnolipid of about 29% to about 37% by weight, based on the total weight of rhamnolipids present in the composition;

an amount of C10-C10 di-rhamnolipid of about 35% to about 50% by weight, based on the total weight of rhamnolipids present in the composition;

an amount of C8-C10 mono-rhamnolipid of about 2% to about 5% by weight, based on the total weight of rhamnolipids present in the composition;

an amount of C8-C10 di-rhamnolipid of about 2% to about 5% by weight, based on the total weight of rhamnolipids present in the composition;

an amount of C10-C12 mono-rhamnolipid of about 2% to about 6% by weight, based on the total weight of rhamnolipids present in the composition; and

an amount of C10-C12 di-rhamnolipid of about 8% to about 14% by weight, based on the total weight of rhamnolipids present in the composition;

(b) at least one acceptable carrier, and optionally one or more additives, in an amount to total 100% by weight of the composition.

[0009] One example of the present technology is directed to compositions and methods for treating a wound. The methods of the present disclosure comprise applying a composition to the wound, wherein the composition comprises at least one rhamnolipid, and wherein application of the composition modifies the expression of at least one gene associated with one or more of the normal stages of healing. In some examples, the wound being treated is an incision, a laceration, an abrasion, an avulsion, a puncture, a penetration, or a burn wound. In other examples, the composition applied to the wound comprises mono-rhamnolipid, di-rhamnolipid, or a combination of both mono- and di-rhamnolipids. In further examples, the expression of at least one gene is increased or decreased in response to the application of the rhamnolipid compositions presented herein.

[0010] In another example, the present technology is directed to a rhamnolipid composition for use in methods of treating wounds, wherein the composition comprises

Claims

1.Use of a composition in a manufacture of a medicament for treating a wound, the composition comprising:

(a) a mixture of rhamnolipids, wherein the mixture of rhamnolipids comprises:

mono-rhamnolipids and di-rhamnolipids in a weight ratio of about 40:60 to about 60:40 mono-rhamnolipids:di-rhamnolipids;

an amount of C10-C10 mono-rhamnolipid of about 29% to about 40% by weight, based on the total weight of rhamnolipids present in the composition;

an amount of C10-C10 di-rhamnolipid of about 35% to about 50% by weight, based on the total weight of rhamnolipids present in the composition;

an amount of C8-C10 mono-rhamnolipid of about 2% to about 5% by weight, based on the total weight of rhamnolipids present in the composition;

an amount of C8-C10 di-rhamnolipid of about 2% to about 5% by weight, based on the total weight of rhamnolipids present in the composition;

an amount of C10-C12 mono-rhamnolipid of about 2% to about 6% by weight, based on the total weight of rhamnolipids present in the composition; and

an amount of C10-C12 di-rhamnolipid of about 8% to about 14% by weight, based on the total weight of rhamnolipids present in the composition;

(b) at least one acceptable carrier, and optionally one or more additives, in an amount to total 100% by weight of the composition.

2. The use of claim 1, wherein the mixture of rhamnolipids further comprises an amount of C10-C12:1 di-rhamnolipid of about 2% to about 5% by weight, based on the total weight of rhamnolipids present in the composition.

3. The use of claim 1, wherein the mixture of rhamnolipids further comprises an amount of C12-C12 di-rhamnolipid of about 0.2% to about 0.4% by weight, based on the total weight of rhamnolipids present in the composition.

4. The use of claim 1, wherein the mixture of rhamnolipids comprises an amount of total mono-rhamnolipid of about 40% to about 50% by weight, based on the total weight of rhamnolipids present in the composition.

5. The use of claim 1, wherein the mixture of rhamnolipids comprises an amount of total di-rhamnolipid of about 50% to about 60% by weight, based on the total weight of rhamnolipids present in the composition.

6. The use of any one of claims 1 to 5, wherein the mixture of rhamnolipids is in an amount of about 0.1% to about 10%, based on the total weight of the composition.

7. The use of any one of claims 1 to 6, wherein the wound to be treated is an incision, laceration, abrasion, or burn.

8. The use of any one of claims 1 to 7, wherein the at least one acceptable carrier is water alone or in combination with an alcohol or glycol.

9. The use of claim 8, wherein the alcohol is ethanol, isopropanol, or benzyl alcohol.

10. The use of claim 8, wherein the glycol is propylene glycol or polyethylene glycol.

11. The use of any one of claims 1 to 10, wherein the use comprises the composition to be topically administered.

12. A wound care composition, comprising:

(a) a mixture of rhamnolipids, wherein the mixture of rhamnolipids comprises:

mono-rhamnolipids and di-rhamnolipids in a weight ratio of about 40:60 to about 50:50 mono-rhamnolipids:di-rhamnolipids;

an amount of C10-C10 mono-rhamnolipid of about 29% to about 37% by weight, based on the total weight of rhamnolipids present in the composition;

an amount of C10-C10 di-rhamnolipid of about 35% to about 50% by weight, based on the total weight of rhamnolipids present in the composition;

an amount of C8-C10 mono-rhamnolipid of about 2% to about 5% by weight, based on the total weight of rhamnolipids present in the composition;

an amount of C8-C10 di-rhamnolipid of about 2% to about 5% by weight, based on the total weight of rhamnolipids present in the composition;

an amount of C10-C12 mono-rhamnolipid of about 2% to about 6% by weight, based on the total weight of rhamnolipids present in the composition; and

an amount of C10-C12 di-rhamnolipid of about 8% to about 14% by weight, based on the total weight of rhamnolipids present in the composition;

(b) at least one acceptable carrier, and optionally one or more additives, in an amount to total 100% by weight of the composition.

13. The wound care composition of claim 12, wherein the mixture of rhamnolipids further comprises an amount of C10-C12:1 di-rhamnolipid of about 2% to about 5% by weight, based on the total weight of rhamnolipids present in the composition.

14. The wound care composition of claim 12 or 13, wherein the mixture of rhamnolipids further comprises an amount of C12-C12 di-rhamnolipid of about 0.2% to about 0.4% by weight, based on the total weight of rhamnolipids present in the composition.

15. The wound care composition of any one of claims 12-14, wherein the mixture of rhamnolipids comprises an amount of total mono-rhamnolipid of about 40% to about 48% by weight, based on the total weight of rhamnolipids present in the composition.

16. The wound care composition of any one of claims 12-15, wherein the mixture of rhamnolipids comprises an amount of total di-rhamnolipid of about 52% to about 60% by weight, based on the total weight of rhamnolipids present in the composition.

17. The wound care composition of any one of claims 12-16, wherein the mixture of rhamnolipids is in an amount of about 0.1% to about 10%, based on the total weight of the composition.

18. The wound care composition of any one of claims 12-17, wherein the at least one acceptable carrier is water alone or in combination with an alcohol or glycol.

19. The wound care composition of claim 18, wherein the alcohol is ethanol, isopropanol, or benzyl alcohol.

20. The wound care composition of claim 18, wherein the glycol is propylene glycol or polyethylene glycol.