CLAIMS

1. A method of producing a modified silk from a silkworm, comprising:

mixing and simultaneously heating a mixture comprising mulberry leaf powder and water;

mixing the mixture with an organic acid after heating the mixture to form a feed composition comprising the organic acid, wherein the organic acid to be mixed with the mixture is less than 1 wt% of the mulberry leaf powder;

feeding the silkworm with the feed composition to generate the modified silk; and

extracting the modified silk from the silkworm, wherein the modified silk comprises crystallites and each of the crystallites has a length of not more than 7 nm,

wherein the organic acid comprises a carboxylic acid group (-COOH).

2. The method according to claim 1, further comprising mixing the mulberry leaf powder and water in a weight to volume ratio of 1:1 to 1:10 before mixing and simultaneously heating the mixture.

3. The method according to claim 1 or 2, wherein the heating comprises exposing the mixture to microwaves.

4. The method according to any one of claims 1 to 3, wherein the organic acid mixed with the mixture is 0.001 to 0.9 wt% of the mulberry leaf powder.

5. The method according to any one of claims 1 to 4, wherein generating the modified silk comprises forming a complex formed from a tyrosine and the organic acid which prevents the tyrosine from being incorporated into the crystallites of the modified silk.

6. The method according to any one of claims 1 to 5, wherein the organic acid is a monoprotic or polyprotic organic acid.

7. The method according to any one of claims 1 to 6, wherein the organic acid is selected from the group consisting of citric acid ($HOC(COOH)(CH_2COOH)_2$), acetic acid (CH_3COOH),

formic acid (HCOOH), benzoic acid (C_6H_5COOH), glycolic acid, oxalic acid, succinic acid, malic acid, malonic acid, nitrilotriacetic acid, and a combination thereof.

8. The method according to any one of claims 1 to 7, wherein the organic acid is citric acid.

9. A feed composition for producing a modified silk from a silkworm, wherein the modified silk comprises crystallites and each of the crystallites has a length of not more than 7 nm, the feed composition comprising:

mulberry leaf powder which was simultaneously mixed and heated with water to form a mixture; and

an organic acid which induces a change in each of the crystallites to have the length of not more than 7 nm for the modified silk, wherein the organic acid to be mixed with the mixture is less than 1 wt% of the mulberry leaf powder,

wherein the organic acid comprises a carboxylic acid group (-COOH).

10. The feed composition according to claim 9, wherein the organic acid is 0.001 to 0.9 wt% of the mulberry leaf powder.

11. The feed composition according to claim 9 or 10, wherein the mulberry leaf powder and water is present in a weight to volume ratio of 1:1 to 1:10.

12. The feed composition according to any one of claims 9 to 11, wherein the organic acid interacts with a tyrosine to form a complex which prevents the tyrosine from being incorporated into crystallites of the modified silk.

13. The feed composition according to any one of claims 9 to 12, wherein the organic acid is a monoprotic or polyprotic organic acid.

14. The feed composition according to any one of claims 9 to 13, wherein the organic acid is selected from the group consisting of citric acid ($HOC(COOH)(CH_2COOH)_2$), acetic acid(CH_3COOH), formic acid (HCOOH), benzoic acid (C_6H_5COOH), glycolic acid, oxalic acid, succinic acid, malic acid, malonic acid, nitrilotriacetic acid, and a combination thereof.

15. The feed composition according to any one of claims 9 to 14, wherein the organic acid is citric acid.