A further object of the present disclosure provides a synthetic hypericin produced by a process comprising at least one of the following steps:

(a) photoconverting protohypericin to crude hypericin using micro-reactor equipped with a Light Emitting Diode (LED) light source either as batch or continuous mode;

(b) solubilizing crude hypericin in a solvent at a pre-precipitation temperature; filtering the treated hypericin while providing at least one cooling ramp to reach a post-precipitation temperature, wherein a precipitate is formed; washing and filtering the precipitate preferably with a washing solvent; and

(c) treating crude hypericin with at least one salt forming reagent in a solvent at a pre-precipitation temperature; filtering the treated hypericin while providing at least one cooling ramp to reach a post-precipitation temperature, wherein a precipitate is formed; washing and filtering the precipitate preferably with a washing solvent, wherein the at least one step (a), (b) and (c) is followed by drying of the purified hypericin product with nitrogen, water vapor or air under vacuum.

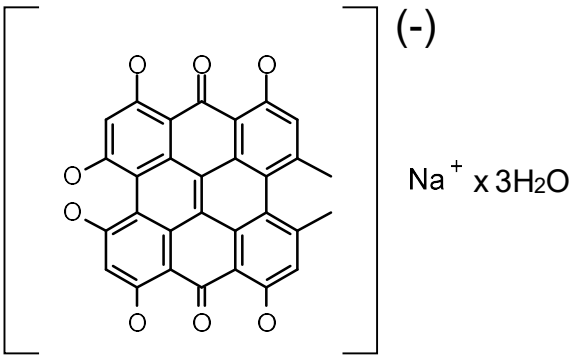
In an aspect, the present disclosure refers to a process for producing a purified synthetic hypericin having a yield of at least 75% to 100% of a dry product from step (c), comprising the following steps:

(a) photoconverting protohypericin to crude hypericin using a micro-reactor comprising a LED light source either as batch or continuous mode;

(b) solubilizing crude hypericin in a solvent at a pre-precipitation temperature, filtering the treated hypericin while providing at least one cooling ramp to reach a post-precipitation temperature, wherein a precipitate is formed and washing and filtering the precipitate in a washing solvent; and

(c) treating crude hypericin with at least one salt forming reagent in a solvent at a pre-precipitation temperature, filtering the treated hypericin while providing at least one cooling ramp to reach a post-precipitation temperature, wherein a precipitate is formed and washing and filtering the precipitate in a washing solvent,

wherein the steps (a), (b) and (c) are followed by drying of the purified hypericin product with nitrogen, vacuum or air under vacuum and further wherein the synthetic hypericin is a mono-sodium salt in the form of a trihydrate having the following structure



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In another example, there is provided a method of preparing a purified synthetic hypericin, the method comprising:

(a) photoconverting protohypericin to crude hypericin;

(b) treating the crude hypericin with at least one salt forming reagent in a solvent at a pre-precipitation temperature;

(c) filtering the crude hypericin from step (b) while providing at least one cooling ramp to reach a post-precipitation temperature, wherein a precipitate is formed;

(d) washing and filtering the precipitate from step (c) with a washing solvent; and

CLAIMS

What is claimed is:

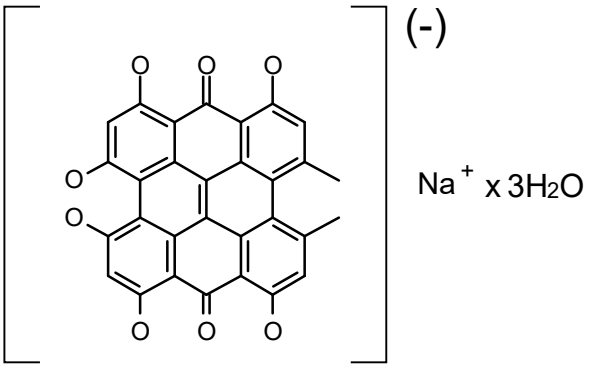
1. A process for producing a purified synthetic hypericin having a yield of at least 75% to 100% of a dry product from step (c), comprising the following steps:

(a) photoconverting protohypericin to crude hypericin using a micro-reactor comprising a LED light source either as batch or continuous mode;

(b) solubilizing crude hypericin in a solvent at a pre-precipitation temperature, filtering the treated hypericin while providing at least one cooling ramp to reach a post-precipitation temperature, wherein a precipitate is formed and washing and filtering the precipitate in a washing solvent; and

(c) treating crude hypericin with at least one salt forming reagent in a solvent at a pre-precipitation temperature, filtering the treated hypericin while providing at least one cooling ramp to reach a post-precipitation temperature, wherein a precipitate is formed and washing and filtering the precipitate in a washing solvent,

wherein the steps (a), (b) and (c) are followed by drying of the purified hypericin product with nitrogen, vacuum or air under vacuum and further wherein the synthetic hypericin is a mono-sodium salt in the form of a trihydrate having the following structure



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2. The process of claim 1, wherein the solvent is selected from the group consisting of methanol, acetone, methyl ethyl ketone and ethyl acetate.

3. The process of claim 1, wherein the solvent from step (b) and step (c) are the same solvent.

4. The process of claim 1, wherein the solvent from step (b) is different from the solvent of step (c).

5. The process of claim 1, wherein the washing solvent is selected from at least one of the group consisting of ethyl acetate, hexane, pentane, ether and methyl tertiary butyl ether (MTBE).

6. The process of claim 1, wherein the at least one salt forming reagent is selected from the group consisting of sodium bicarbonate, ammonium bicarbonate, potassium bicarbonate, calcium bicarbonate, and magnesium bicarbonate.

7. The process of claim 1, wherein the process comprises: photoconverting resulting from exposure to a standard light at a wavelength between 350-700 nm.

8. The process of claim 1, wherein the process comprises a pre-precipitation temperature greater than 40 ºC.

9. The process of claim 1, wherein the process comprises: a post-precipitation temperature less than 40 ºC.