Claims

1. A method of culturing *Haematococcus* species for manufacturing of astaxanthin comprising the steps of:
   - providing a substrate,
   - arranging the *Haematococcus* species on the surface of the substrate,
   - exposing the *Haematococcus* species arranged on the substrate to high light intensities of at least 200 µmol photons m^{-2} s^{-1} from the beginning of a culturing process and

     avoiding a two-step culturing process of the *Haematococcus* species with a first step which is an initial culturing taking place by exposure of the *Haematococcus* species to low light energy, wherein the low light energy in the first step is 50 µmol photons m^{-2} s^{-1} to less than 200 µmol photons m^{-2} s^{-1}, followed by a second step of subsequent culturing of the *Haematococcus* species by exposure of the *Haematococcus* species to higher light energy than applied in the first step to induce astaxanthin formation, wherein the higher light energy in the second step is at least 200 µmol photons m^{-2} s^{-1}, and optionally
   - harvesting the cultured *Haematococcus* species and/or
   - isolating astaxanthin.

2. The method of claim 1 wherein the astaxanthin is isolated from harvested *Haematococcus* species.

3. The method of claim 1 or 2 wherein the *Haematococcus* species is *Haematococcus pluvialis*.

4. The method of any one of claims 1 to 3, wherein the high light intensities are at least 250 µmol photons m^{-2} s^{-1} or more.

5. The method of any one of claims 1 to 4, wherein the high light intensities are at least 500 µmol photons m^{-2} s^{-1} or more.

6. The method of any one of claims 1 to 5 wherein the substrate is a sheet-like material.

7. The method of claim 6, wherein the sheet-like material is porous.

8. The method of anyone of claims 6 and 7, wherein the sheet-like material is selected from the group consisting of paper and cellulose ester.

9. The method of any one of claims 6 and 7, wherein the sheet-like material is selected from the group consisting of cellulose acetate, mixed cellulose ester, cellulose, cellulose nitrate, polyamides, polyesters and/or polyolefines.