and phospholipids.

At least one of the preceding aims is met, in whole or in part, by the present invention, in which one of the embodiments of the present invention is a drag delivery composition of phospholipids, tocotrienols and tocopherols for oral administration to enhance the normalisation of fatty liver, wherein the amount of phospholipids in the composition is in the range of substantially 4.5 % (w/w) to substantially 2,0 % (w/w), the amount of the tocotrienols in the composition is in the range of substantially 10 % (w/w) to 35 % (w/w) and tocopherol in tire composition is in the range of substantially 2 % (w/w) to substantially 10 % (w/w).

Preferably, the composition further comprises water-soluble vitamin selected from the group consisting of nicotinamide, cyanocobalamine and folic acid.

Preferably, the tocotrienols used comprises alpha tocotrienol in the range of substantially 3.5 % (w/w) to substantially 9 % (w/w) beta tocotrienol in the range of substantially 0.4 % (w/w) to substantially 2.2 % (w/w), gamma tocotrienol in the range of substantially 4.5 % (w/w) to substantially 15.5 % (w/w) and delta tocotrienol in the range of substantially 1 % (w/w) to substantially 7.5 % (w/w).

Preferably, the tocopherol used comprises alpha tocopherol in the range of substantially 2 % (w/w) to substantially 10 % (w/w).

Preferably, the phospholipids used is plant-based phosphatidylcholine, phosphatidylethanolamine, phosphatidic acid, phosphoinosi tides or phosphatidylserine .

Another aim of the present invention is to provide a composition which self-emulsify in the presence of aqueous medium with little agitation so as to improve

range of substantially 1 % (w/w) to substantially 7.5 % (w/w). The tocopherol used comprises alpha tocopherol in the range of substantially 2 % (w/w) to substantially 10 % (w/w).

Another active ingredient used in the composition is phospholipids, more preferably plant-based phospholipids. Amongst others, the phospholipids used is phosphatidylcholine, phosphatidylethanolamine, phosphatidic acid, phosphoinositides or phosphatidylserine. In the preferred embodiments, the phospholipids used are derived from soy bean, such as soy bean lecithin. It was found that phospholipids can be incorporated into damaged sections of membrane thereby facilitates hepatic regeneration and replaces endogenous, unsaturated phospholipids. Moreover, phospholipids can improve membrane fluidity and possess antioxidative, anti-inflammatory, apoptosis-modulating and anti-fibriotic properties.

In some embodiments, water-soluble vitamin selected from the group consisting of nicotinamide, cyanoeobalamine and folic acid are used. Additional benefits from the water-soluble vitamin can enhance fatty liver normalisation effect of the composition in the present invention. It was found that nicotinamide can increase redox potential, reduce hepatic cholesterol content and substantially block the gain in liver weight. Further, it was found that cyanoeobalamine deficiency can induce higher rates of adiposity and accompanied by a change in lipid metabolism pathways. Supplementing cyanoeobalamine can avoid the abovementioned changes. Moreover, folic acid can alleviate inflammatory response in liver thereby contribute to hepatoprotective effect.

The active ingredients can be formed into edible capsules which self-emulsify in the presence of aqueous medium with little agitation so as to improve bioavailability thereof upon orally administered. Particularly, the active ingredients can be blended with suitable oil, surfactant and co-surfactant. The present invention uses a combination of oil, surfactant and co-surfactant which enable the active ingredients to

CLAIMS

1. A drug delivery composition of phospholipids, tocotrienols and tocopherol for oral administration to enhance the normalisation of fatty liver, wherein the amount of phospholipids in the composition is in the range of 4.5 % (w/w) to 20% (w/w), preferably the phospholipids used is plant-based phophatidylcholine, phosphatidylethanolamine, phosphatidic acid, phosphoinositides or phosphatidylserine, the amount of tocotrienols is in the range of 10 % (w/w) and 35% (w/w), preferably the tocotrienols comprise alpha tocotrienol in the range of 3.5 % (w/w) to 9% (w/w), beta tocotrienol in the range of 0.4% (w/w) to 2.2 % (w/w), gamma tocotrienol in the range of 4.5% (w/w) to 15.5 % (w/w), delta tocotrienol in the range of 1 % (w/w) to 7.5% (w/w), and the amount of tocopherol is in the range of 2% (w/w) to 10% (w/w), preferably alpha tocopherol in the range of 2% (w/w) to 10% (w/w).

2. The composition according to Claim 1 further comprises water-soluble vitamin selected from the group consisting of nicotinamide, cyanocobalamine and folic acid.

3. The drug delivery composition according to Claim 1 or 2, wherein the composition is a self emulsifying composition comprising a non-ionic surfactant, preferably polyoxy-35 castor oil, a co-surfactant, preferably caprylocaproyl macrogol-8-gylcerides, vegetable oil, preferably palm olein, and active ingredients comprising phospholipids, preferably the phospholipids is a plant-based phophatidylcholine, phosphatidylethanolamine, phosphatidic acid, phosphoinositides or phosphatidylserine, tocotrienols, preferably the tocotrienols comprise alpha tocotrienol in the range of 3.5% (w/w) to 9 % (w/w), beta tocotrienol in the range of 0.4% (w/w) to 2.2 % (w/w), gamma tocotrienol in the range of 4.5 % (w/w) to 15.5 % (w/w) and delta tocotrienol in the range of 1% (w/w) to 7.5% (w/w) and tocopherol, preferably the tocopherol used comprises alpha tocopherol in the range of 2% (w/w) and 10% (w/w).

4. The drug delivery composition according to Claim 3 further comprises water-soluble vitamin selected from the group consisting of nicotinamide, cyanocobalamine and folic acid.

5. A method for producing a self-emulsifying composition according to claim 3 or 4, the method comprising the steps of: mixing a non-ionic surfactant, co-surfactant and vegetable oil to obtain a first mixture;

adding phospholipids into the first mixture and mixing to obtain a homogeneous second mixture; and adding a mixture of tocotrienols and tocopherols into the second mixture and further mixing thereof until homogeneous.

6. The method according to Claim 5 further comprises a step of melting beeswax into the vegetable oil, followed by adding there into the first mixture.

7. The method according to Claim 5 or 6 further comprises a step of sieving water-soluble vitamin powder into the second mixture followed by shearing and milling thereof.

8. The method according to Claim 7, wherein the water-soluble vitamin used is selected from the group consisting of nicotinamide, cyanocobalamine and folic acid.

9. The method according to any one of Claims 5 to 8, wherein the self-emulsifying composition comprises the amount of phospholipids in the range of 4.5 % (w/w) to 20% (w/w) and the amount of the tocotrienols in the range of 10 % (w/w) to 35% (w/w) and tocopherol in the range of 2% (w/w) to 10% (w/w).

10. The method according to any one of Claims 5 to 9, wherein the tocotrienols used comprises alpha tocotrienol in the range of 3.5 % (w/w) to 9 % (w/w), beta tocotrienol in the range of 0.4 % (w/w) to 2.2 % (w/w), gamma tocotrienol in the range of 4.5% (w/w) to 15.5% (w/w) and delta tocotrienol in the range of 1% (w/w) to 7.5% (w/w).

11. The method according to any one of Claims 5 to 10, wherein the tocopherol used comprises alpha tocopherol in the range of substantially 2 % (w/w) to substantially 10% (w/w).

12. The method according to any one of Claims 5 to 11, wherein the non-ionic surfactant used is polyoxy-35 castor oil.

13. The method according to any one of Claims 5 to 12, wherein the co-surfactant used is caprylocaproyl macrogol-8-gylcerides.

14. The method according to any one of Claims 5 to 13, wherein the vegetable oil used is palm olein.

15. The method according to any one of Claims 5 to 14, wherein the phospholipids used is plant-based phosphatidylcholine, phosphatidylethanolamine, phosphatidic acid, phosphoinositides or phosphatidylserine.