【CLAIMS】

1. A hybrid-type multi-lamellar nanostructure of an epidermal growth factor and a liposome, comprising:

(a) an empty unilamellar liposome composed of a cationic lipid bilayer;

(b) one or more unilamellar liposomes surrounding the empty unilamellar liposome and composed of a cationic lipid bilayer; and

(c) an epidermal growth factor having physiological activity,

wherein the epidermal growth factor is associated with the unilamellar liposomes by electrostatic interaction and located between the unilamellar liposomes,

wherein the hybrid-type multi-lamellar nanostructure has a particle size of 50-500 nm,

wherein the cationic lipid is one or more selected from the group consisting of 1,2-dioleoyl-sn-glycero-3-ethylphosphocholine (EDOPC), 1-palmitoyl-2-oleoyl-sn-glycero-3-ethylphosphocholine (EPOPC), 1,2-dimyristoyl-sn-glycero-3-ethylphosphocholine (EDMPC), 1,2-distearoyl-sn-glycero-3-ethylphosphocholine (SPC), 1,2-dipalmitoyl-sn-glycero-3-ethylphosphocholine (EDPPC), 1,2-dioleoyl-3-trimethylammonium-propane (DOTAP), N-[1-(2,3-dioleyloxy)propyl]-N,N,N-trimethylammonium chloride (DOTMA), 3β-[N-(N',N'-dimethylaminoethane)-carbamoyl]cholesterol (DC-cholesterol), dioleoyl glutamide, distearoyl glutamide, dipalmitoyl glutamide, dioleoyl aspartamide, and dimethyldioctadecylammonium bromide (DDAB).

2. The nanostructure of claim 1, wherein the empty unilamellar liposomes have a zeta potential of +1 to 100 mV.

3. The nanostructure of claim 1, wherein a weight ratio (w/w) of the epidermal growth factor : the cationic lipid is 0.001 to 2.5 : 1.

4. The nanostructure of claim 1, wherein an encapsulation rate of the epidermal growth factor into the hybrid-type multi-lamellar nanostructure is 60% or more.

5. A method for preparing the hybrid-type multi-lamellar nanostructure of any one of claims 1 to 4, the method comprising the steps of:

(i) preparing a solution containing an empty unilamellar liposome with a uniform particle size composed of a cationic lipid;

(ii) preparing an aqueous solution containing an epidermal growth factor having physiological activity; and

(iii) mixing the empty unilamellar liposome-containing solution obtained in step (i), with the epidermal growth factor-containing aqueous solution obtained in step (ii),

wherein the cationic lipid is one or more selected from the group consisting of 1,2-dioleoyl-sn-glycero-3-ethylphosphocholine (EDOPC), 1-palmitoyl-2-oleoyl-sn-glycero-3-ethylphosphocholine (EPOPC), 1,2-dimyristoyl-sn-glycero-3-ethylphosphocholine (EDMPC), 1,2-distearoyl-sn-glycero-3-ethylphosphocholine (SPC), 1,2-dipalmitoyl-sn-glycero-3-ethylphosphocholine (EDPPC), 1,2-dioleoyl-3-trimethylammonium-propane (DOTAP), N-[1-(2,3-dioleyloxy)propyl]-N,N,N-trimethylammonium chloride (DOTMA), 3β-[N-(N',N'-dimethylaminoethane)-carbamoyl]cholesterol (DC-cholesterol), dioleoyl glutamide, distearoyl glutamide, dipalmitoyl glutamide, dioleoyl aspartamide, and dimethyldioctadecylammonium bromide (DDAB).

6. The method of claim 5, wherein the empty unilamellar liposomes obtained in step (i) have a particle size of 100-300 nm.

7. A cosmetic composition containing, as an active ingredient, the hybrid-type multi-lamellar nanostructure of any one of claims 1 to 4.

8. The cosmetic composition of claim 7, wherein the hybrid-type multi-lamellar nanostructure permeates to the dermis of the skin.