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AN ANIMAL-DERIVED EXOSOME COMPOSITION AND APPLICATION THEREOF IN PREPARING SKIN ANTI-AGING AND ANTI-ALLERGIC FORMULATIONS

ABSTRACT

The present application relates to the field of biomedicine, specifically disclosing an animal-derived exosome composition and its application in skin anti-aging and anti-allergic formulations. Said composition comprises, by weight parts: exosomes 60–80 parts, Chlorella Growth Factor (CGF) 35–55 parts, Human Epidermal Growth Factor (hEGF) 2.5–3.5 parts, Niacinamide 25–45 parts, Lecithin 2–6 parts, and Linoleic Acid 2–5 parts. The composition enhances human dermal fibroblast proliferation by >132%. When incorporated into anti-wrinkle cosmetics or pharmaceuticals, it effectively reduces skin wrinkles and suppresses allergic reactions.

CLAIMS

1. An animal-derived exosome composition, characterized in that, by weight parts, it comprises: exosomes 60–80 parts, Chlorella Growth Factor 35–55 parts, Human Epidermal Growth Factor 2.5–3.5 parts, Niacinamide 25–45 parts, Lecithin 2–6 parts, and Linoleic Acid 2–5 parts.
2. The composition according to claim 1, characterized in that it comprises: exosomes 70–80 parts, Chlorella Growth Factor 35–45 parts, Human Epidermal Growth Factor 3–3.5 parts, Niacinamide 35–45 parts, Lecithin 2–6 parts, and Linoleic Acid 2–5 parts.
3. The composition according to claim 1, characterized in that it comprises: exosomes 70 parts, Chlorella Growth Factor 45 parts, Human Epidermal Growth Factor 3 parts, Niacinamide 35 parts, Lecithin 4 parts, and Linoleic Acid 3 parts.
4. The composition according to any one of claims 1 to 3, characterized in that it further comprises Polysorbate 80 (Tween 80) 2–5 parts.
5. The composition according to any one of claims 1 to 3, characterized in that said exosomes are derived from the umbilical cord of viviparous animals.
6. The composition according to claim 5, characterized in that said viviparous animal is ovine (sheep).
7. Application of the animal-derived exosome composition in preparing skin anti-aging formulations.
8. Application according to claim 7, wherein said formulation is a skincare cosmetic or a pharmaceutical product.
9. Application of the animal-derived exosome composition in preparing anti-allergic formulations.
10. Application according to claim 9, wherein said formulation is a skincare cosmetic or a pharmaceutical product.

DESCRIPTION

AN ANIMAL-DERIVED EXOSOME COMPOSITION AND APPLICATION THEREOF IN PREPARING SKIN ANTI-AGING AND ANTI-ALLERGIC FORMULATIONS

TECHNICAL FIELD & BACKGROUND

[0001]-[0004] Mesenchymal stem cell-derived exosomes (40–100 nm) harbor rich bio-signaling proteins, mRNAs, and miRNAs. As cell-free therapeutics, exosomes exhibit low immunogenicity, high safety, and superior stability compared to live cells. The present invention addresses skin rejuvenation, anti-aging, and anti-allergic needs in aesthetic dermatology.

SUMMARY OF INVENTION & SYNERGISTIC FORMULA

[0005]-[0025] The core invention is a quadruple synergistic complex: **Exosomes + Chlorella Growth Factor (CGF) + Human Epidermal Growth Factor (hEGF) + Niacinamide** (further combined with Lecithin, Linoleic Acid, and optionally Tween 80 for skin penetration).

- **Exosomes Source:** Ovine (sheep) umbilical cord MSCs yield the highest fibroblast proliferation boost (+178%) compared to porcine (+158%) or bovine (+144%).
- **Synergy Necessity:** Omitting any single key component drastically drops fibroblast proliferation enhancement (omitting exosomes: +2%; omitting CGF: +5%; omitting hEGF: +1%; omitting Niacinamide: +8%).

PERFORMANCE & EXPERIMENTAL VALIDATION

1. HUMAN DERMAL FIBROBLAST PROLIFERATION (MTT ASSAY AT 5 MG/ML)

Table 1: Human Dermal Fibroblast Proliferation Test Results (%)

Group	Composition Details (Exo/CGF/hEGF/Niacinamide in mg)	Fibroblast Proliferation Activity (%)
Control Group	Blank Culture Medium	100 ± 2.1%
Example 1	70 / 45 / 3 / 35 (Ovine Exosomes)	278 ± 1.2% (+178%)
Example 2	60 / 45 / 3 / 35	264 ± 1.4%
Example 3	80 / 45 / 3 / 35	254 ± 1.7%
Example 4	70 / 35 / 3 / 35	266 ± 2.1%
Example 5	70 / 55 / 3 / 35	260 ± 1.5%
Example 10	Porcine Exosomes Source	258 ± 2.2%
Example 11	Bovine Exosomes Source	244 ± 2.0%
Example 12	With 3 mg Tween 80	281 ± 1.3%
Comp. Ex. 9	Exosome Omitted (0 / 45 / 3 / 35)	102 ± 3.7% (+2%)
Comp. Ex. 10	CGF Omitted (70 / 0 / 3 / 35)	105 ± 4.3% (+5%)
Comp. Ex. 11	hEGF Omitted (70 / 45 / 0 / 35)	101 ± 4.5% (+1%)
Comp. Ex. 12	Niacinamide Omitted (70 / 45 / 3 / 0)	108 ± 4.0% (+8%)

2. CLINICAL ANTI-WRINKLE EVALUATION (60 FEMALE VOLUNTEERS, 30–60 YEARS OLD)

Table 2: Clinical Skin Wrinkle Score Improvement (Dermoscopy, 10-Point Scale)

Group	Age Group	Before Use	Day 1	Day 5	Day 10	Day 20	Day 30
Example 1 Facial Mask	30–40 Yrs	5.2	5.6	6.2	8.2	8.4	9.4
	40–50 Yrs	3.7	5.3	3.1	6.5	7.5	7.8
	50–60 Yrs	4.6	2.2	3.2	5.3	6.4	6.9
Comparative Mask	30–40 Yrs	5.1	5.1	5.1	5.1	5.2	5.3
	40–50 Yrs	3.3	3.3	3.3	3.3	3.5	3.6
	50–60 Yrs	2.0	2.0	2.0	2.0	2.0	2.1

3. IN VIVO ANTI-ALLERGIC STUDY (MICE DNCB SENSITIZATION MODEL)

Table 3: Total Serum IgE Levels (ng/mL)

Group	Treatment Status	Total Serum IgE (ng/mL)
Group 1	Normal Control (Unsensitized)	8.23 ± 21.34
Group 2	Allergic Model Control (DNCB Induced)	243.43 ± 44.62
Group 3	Example 1 Formulation Treatment	85.38 ± 18.35 (Near Normal)
Group 4	Comparative Formulation Treatment	189.81 ± 20.57