

REVIEW ARTICLE

A review on oriflames time reversing skin care products and their benefits

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ABSTRACT

Oriflame Time Reversing Restoring Day and Night creams are advanced anti-ageing formulas for mature women. Together they provide a complete treatment to restore and revitalise dry, mature skin. Both are formulated with β-Prostimuline Complex, a unique combination of 3 powerful active ingredients like Soybean Protein, Pea Extract, Seaweed biopeptides which has special targeting aspects of hormonal ageing needs. Time Reversing Intense contains Astaxanthin, the “king of Antioxidants” essential for post-menopausal skin. It reduces UV- induced wrinkles and helps protect cell membranes from ageing. Time Reversing SkinGenist is new formulation of luxurious elixirs to re-awaken youth in mature skin. The limitless youth potential of our skin is encoded in the 3 skin Beauty Genes Aquaporin, Cd44 and Cadherin Genes. Genistein Soy, an advanced anti-ageing compound which is one of several known isoflavones, identifies and empowers our beauty Genes. Re-activated, they help us in retaining youthful appearance. GenisteinSoy is a superior anti-ageing nutrient derived from Soy, which acts at a genetic level. It is encapsulated to reach deeper skin layers and is proven to target all needs of mature skin. This review attempts to guide the reader between the various Oriflames Time Reversing skin care products and their benefits, with a particular focus on Time Reversing Skin Genist Day Cream SPF 15. Paper also deals with FTIR spectra of Time Reversing Skin Genist Day Cream SPF 15. This research, along with better regulation and reporting, will enable consumers to choose products with confidence. This in turn will allow companies to benefit from these novel technologies in the long term while retaining customer confidence. FTIR can be routinely used to identify the functional groups and identification/quality control of raw material/finished products. FTIR spectra of Time Reversing Skin Genist Day Cream SPF 15 is obtained at room temperature by using an FTIR Spectrophotometer - Perkin Elmer - Spectrum RX-IFTIR. The spectra is collected in a range from 650

to 4000 cm^{-1} . Interpretation of FTIR Spectra of Time Reversing Skin Genist Day Cream SPF 15 shows presence of various functional groups such as Alcohols - Secondary CH-OH; Alkane - Iso - propyl, Tertiary butyl, Ethyl, n-propyl; Aldehydes - Aliphatic Aldehydes $-\text{CH}_2-\text{CHO}$, Aromatic Aldehydes; Amines, Secondary amines, Tertiary amines $(\text{CH}_2)_3\text{N}$, Hydrochloride $\text{C}-\text{NH}_3^+\text{Cl}^-$; Amines - Primary amines, $>\text{CH}-\text{NH}_2$; Aromatic - Monosubstituted Benzene-, Meta disubstituted Benzene, Vicinal trisubstituted Benzene; Imines - Substituted Imines $>\text{C}=\text{N}-\text{C}$; Ketones - Aliph. Ketones $\text{CH}_2-\text{CO}-\text{CH}_2$, Aromatic Ketones .

Key words : Time Reversing Restoring, Time Reversing Intense, Time Reversing SkinGenist, Astaxanthin, Genistein, Time Reversing Skin Genist Day Cream SPF 15, FTIR Spectra.

INTRODUCTION

Oriflame Time Reversing Restoring Day and Night creams are advanced anti-ageing formulas for mature women. Together they provide a complete treatment to restore and revitalise dry, mature skin. Both are formulated with β -Prostimuline Complex, a unique combination of 3 powerful active ingredients like Soybean Protein, Pea Extract, Seaweed biopeptides which has special targeting aspects of hormonal ageing needs. Soybean Protein actively reinforces skin suppleness and elasticity. It also has nutritious, stimulating and restoring effects on cells. Pea extract Stimulates the production of skin proteins and strengthens skin elasticity and firmness. Pea Extract is an active botanical extract derived from seeds of *Pisum sativum* L. It protect skin proteins such as collagen and elastin which are responsible for giving skin its firmness and elasticity against the damaging effects of specific enzymes known as proteases which is activated by aging and through different types of skin abuse (UV, chemical, immunological, etc.). Seaweed Biopeptides improves skin surface and it reduces wrinkles. Biopeptides, derived from seaweed, delivers nutrients to the skin and have anti-inflammatory properties.

Added to that complex, Time Reversing also answers special needs such as radiance and nourishment. RetinylPalmitate and gold shimmer, instantly brings a brighter and more radiant complexion. Shea Butter leaves the skin feeling soft and soothed, while also imparting nourishing and protecting properties.

Time Reversing Intense contains Astaxanthin, the "king of Antioxidants" essential for post-menopausal skin. It reduces UV-induced wrinkles and protect cell membranes from ageing. Astaxanthin is a member of the carotenoid family, it is a dark red pigment. The main carotenoid is found in algae and aquatic animals. It is responsible for the red/pink coloration of crustaceans, shellfish, and the flesh of salmonoids. Algatechnologies produces astaxanthin from the microalga *Haematococcus pluvialis* which is the richest known natural source for astaxanthin. It is primarily an extremely powerful antioxidant. It has the unique capacity to quench free radicals and reactive species of oxygen and to inhibit lipid peroxidation. Studies have shown astaxanthin to be over 500 times stronger than vitamin E and much more potent than other carotenoids such as lutein, lycopene and β -carotene. Astaxanthin was found to have beneficial effects in many health conditions related to the Central Nervous System disorders, skin health, joint health, muscle endurance, as well as to the cardiovascular, immune, eye and other systems.

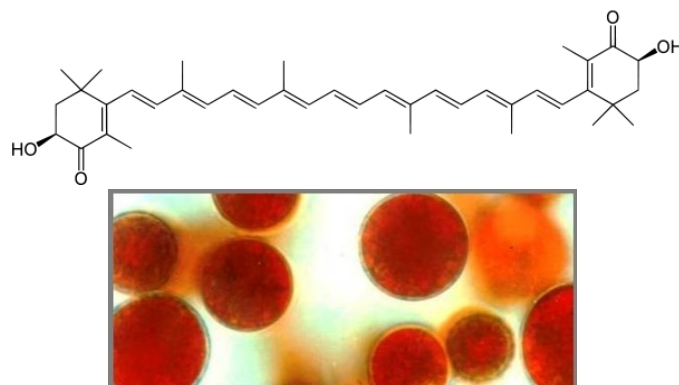


Figure 1. Astaxanthin

Time Reversing SkinGenist contains GenisteinSoy, an advanced anti-aging compound which is one of several known isoflavones which identifies and empowers skin beauty Genes. GenisteinSoy is a superior anti-ageing nutrient derived from Soy, which acts at a genetic level. It is encapsulated to reach deeper skin layers and proven to target all needs of mature skin

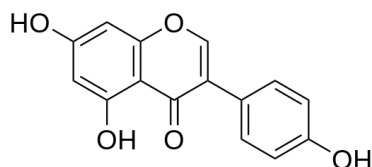


Figure 2. Genistein

The limitless youth potential of our skin is encoded in the 3 skin Beauty Genes - Aquaporin, Cd44 and Cadherin Genes.

Aquaporins are integral membrane proteins from a larger family of major intrinsic proteins that form pores in the membrane of biological cells [1]. Genetic defects involving aquaporin genes have been associated with several human diseases [2, 3]. Aquaporins are the plumbing system for cells. Every cell is primarily water. But the water doesn't just sit in the cell, it moves through it in a very organized way. The process occurs rapidly in tissues that have these aquaporins or water channels. Aquaporins selectively conduct water molecules in and out of the cell, while preventing the passage of ions and other solutes. Water molecules traverse through the pore of the channel in single file. The presence of water channels increases membrane permeability to water.

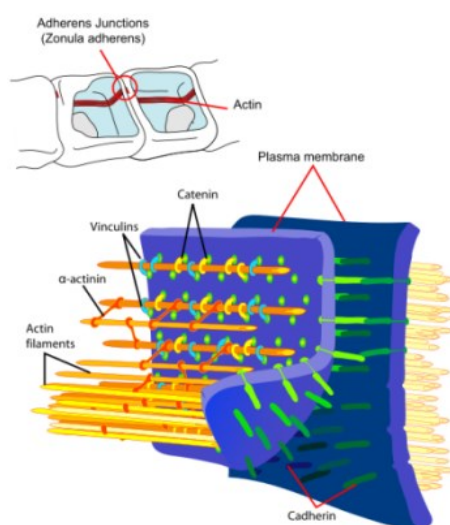


Figure 5. Cadherin

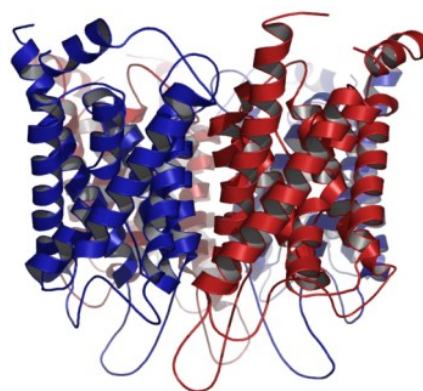


Figure 3. Crystallographic structure of Aquaporin

CD44 antigen is a cell-surface glycoprotein involved in cell-cell interactions, cell adhesion and migration. In humans, the CD44 antigen is encoded by the CD44 gene on Chromosome 11 [4].

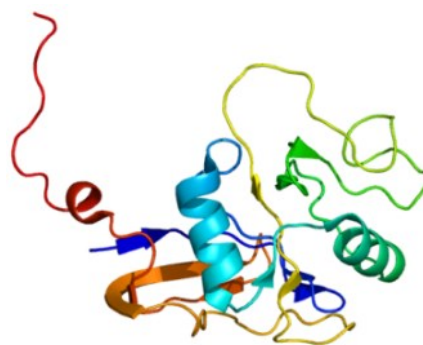
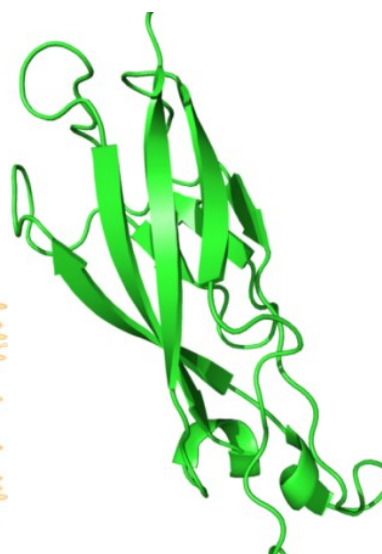


Figure 4. CD44 molecule

Cadherins are a class of type-1 transmembrane proteins. They play important roles in cell adhesion, ensuring that cells within tissues are bound together. They are dependent on calcium (Ca^{2+}) ions to function, hence their name.



This review attempts to guide the reader between the various Oriflames Time Reversing skin care products and their benefits, with a particular focus on Time Reversing Skin Genist Day Cream SPF 15. Paper also deals with FTIR spectra of Time Reversing Skin Genist Day Cream SPF 15. This research, along with better regulation and reporting, will enable consumers to choose products with confidence. This in turn will allow companies to benefit from these novel technologies in the long term while retaining customer confidence.

1. Time Reversing Restoring Day Cream

It restores and revitalises mature skin. This advanced formula improves skin firmness, elasticity and resilience. It helps to reduce wrinkles and makes existing ones less visible. It is enriched with gold complexion enhancer.

2. Time Reversing Restoring Night Cream

This age-defying formula boost cell energy to minimise wrinkles and improve skin firmness and elasticity.

3. Time Reversing Restoring Eye Cream

It hydrates, firms and improves elasticity of mature skin around the eyes and reduces wrinkles and dark shadows.

4. Time Reversing All-in-1 Magic Cleanser

It is complete cleansing care for dry, mature skin. It is a gentle, non-drying cleanser, make-up remover and toner with a magical texture that transforms from a rich cream into a voluptuous oil. It is enriched with Vigna aconitifolia seed extract which boost cell renewal and reveal a fresh, new complexion.

5. Time Reversing Facial Oil Capsules

Each capsule contains a powerful blend of skin conditioning natural oils, vitamin E and essential nutrients which soothes skin and minimises fine lines and wrinkles.

6. Time Reversing In Tense Every Day Perfector Cream SPF 12

It is moisturising, re-densifying and pro-strengthening day cream that combats post-menopausal skin fragility. It contains β -Prostimuline Complex and astaxanthin which is specifically designed for mature skin.

7. Time Reversing InTense Deep Night Reformer Cream

It is unique pro-strengthening formula which combines patented β -Prostimuline Complex and astaxanthin, a super-powerful, natural antioxidant. With active ingredients it repairs mature skin at night, protect cellular DNA and increase the density of the dermal structure by stimulating synthesis of essential skin components.

8. Time Reversing SkinGenist Day Cream SPF 15

It diminishes wrinkles and reactivates the youth potential of the skin over with genistein soy which stimulates skin Beauty Genes which are involved in maintaining the skin's beautiful appearance. It counteracts skin dryness, maintains cell turnover, preserves the structure of the skin, improves skin radiance, resilience and tone. Its key Ingredients include Genistein soy (Gynostemma Pentaphyllum Leaf/Stem Extract) a superior anti-ageing nutrient in a unique encapsulated format to enhance delivery into the skin. SPF 15 protects skin against photo-damage and free radicals. Other Ingredients are Aqua, Ethylhexyl Methoxycinnamate, Glycerin, Ricinus Communis Seed Oil, Ethylhexyl Stearate, Octocrylene, Butyl Methoxydibenzoylmethane, Dimethicone, Glyceryl Stearate Citrate, Butylene Glycol, Ethylhexyl Salicylate, Cyclopentasiloxane, Cera Alba, Cyclohexasiloxane, Acetylated Lanolin, Butyrospermum Parkii Butter, Cetyl Alcohol, Stearic Acid, Sodium Polyacrylate, Palmitic Acid, Bis-Ethylhexyloxyphenol Methoxyphenyl Triazine, Caprylyl Glycol, Imidazolidinyl Urea, Methylparaben, Parfum, Hydrogenated Castor Oil, Propylparaben, Copernicia Cerifera Cera, Pisum Sativum Extract, Disodium EDTA, Mica, Sodium Hydroxide, Propylene Glycol, Silica, Sodium Citrate, Alcohol, Arachidic Acid, Decyl Glucoside, Glutamine, Lauric Acid, Myristic Acid, Potassium Sorbate, Polysorbate 80, Chlorphenesin, BHT, Lecithin, Cistus Incanus Flower/Leaf/Stem Extract, Gynostemma Pentaphyllum Leaf/Stem Extract, Phenethyl Alcohol, Glycyrrhiza Glabra Root Extract, Soy Isoflavones, CI 77891 [5]

9. Time Reversing SkinGenist Night Cream

It reverses the signs of ageing and empowers skin beauty genes during night when our skin is most receptive, nourishes and renews our skin overnight, counteracts skin dryness, boosts skin resilience and visibly diminishes wrinkles. Its key ingredients include Genistein Soy (Gynostemma Pentaphyllum Leaf/Stem Extract) a superior anti-ageing nutrient in a unique encapsulated format to enhance delivery into the skin.

Other Ingredients are Aqua, Ethylhexyl Stearate, Butylene Glycol, Ricinus Communis Seed Oil, Glycerin, Acetylated Lanolin, Butyrospermum Parkii Butter, Cetyl Alcohol, Dimethicone, PEG-2 Stearate, Cera Alba, Carbomer, Caprylyl Glycol, Potassium Cetyl Phosphate, Parfum, Imidazolidinyl Urea, Methylparaben, Hydrogenated Castor Oil, Sodium Hydroxide, Propylparaben, Copernicia Cerifera Cera, Pisum Sativum Extract, Disodium EDTA, Mica, Propylene Glycol, Silica, Sodium Citrate, Alcohol, Decyl Glucoside, Glutamine, Potassium Sorbate, Polysorbate 80, Chlorphenesin, Lecithin, Cistus Incanus Flower/Leaf/Stem Extract, Gynostemma Pentaphyllum Leaf/Stem Extract, Phenethyl Alcohol, Glycyrrhiza Glabra Root Extract, Soy Isoflavones, CI 77891 [6]

10. Time Reversing SkinGenist Day & Night Essence

It contains revitalising GenisteinSOY to stimulate Beauty Genes. It restores and beautifies the skin, resulting in revitalised complexion, reduction of visible lines and wrinkles, more vibrant, suppler and firmer skin appearance. Its ingredients are Aqua, Glycerin, Butylene Glycol, Oleth-20, Carbomer, Phenoxyethanol, Hydroxyethylcellulose, Imidazolidinyl Urea, Ethylhexylglycerin, Pisum Sativum Extract, Chondrus Crispus Powder, Disodium Edta, Parfum, Sodium Hydroxide, Propylene Glycol, Glyceryl Acrylate/Acrylic Acid Copolymer, Sodium Citrate, Agar, Biosaccharide Gum-1, Alcohol, Sodium Chloride, Sodium Hyaluronate, Decyl Glucoside, Glutamine, Potassium Sorbate, Methylparaben, Mica, Polysorbate 80, Chlorphenesin, Benzoic Acid, Glucose, Lecithin, Silica, Potassium Chloride, Dehydroacetic Acid, Xanthan Gum, Cistus Incanus Flower/Leaf/Stem Extract, Gynostemma Pentaphyllum Leaf/Stem Extract, Phenethyl Alcohol, Glycyrrhiza Glabra Root Extract, Propylparaben, Ethylparaben, Soy Isoflavones, CI 77891, CI 77491 [7]

11. Time Reversing SkinGenist Eye Cream

It targets mature skin around the eyes with pure, encapsulated genistein soy which empowers skin Beauty Genes and helps in reversing the signs of ageing. It revitalises and reawakens the appearance of skin around the eyes. It reduces the appearance of eye bags and puffiness and brightens eye area skin. It is nourishing and fast absorbing formula which exerts cooling and soothing after-effect. Its key ingredients include Genistein soy a superior anti-ageing nutrient in a unique encapsulated format to enhance delivery into the skin. Rock Rose a powerful antioxidant which protects the

delicate eye area. Vine Orchid strengthens the skin barrier. Liquorice extract reduces the appearance of dark circles. Other ingredients are Aqua, Glycerin, Propylene Glycol, Butyrospermum Parkii Butter, Hydrogenated Polyisobutene, Prunus Amygdalus Dulcis Oil, Isopropyl Myristate, Glyceryl Stearate Se, Cetareth-20, Tocopheryl Acetate, Polyacrylate-13, Carbomer, Methylparaben, Imidazolidinyl Urea, Cetyl Alcohol, Stearyl Alcohol, Polyisobutene, Potassium Cetyl Phosphate, Propylparaben, Pisum Sativum Extract, Mica, Sodium Hydroxide, Polysorbate 20, Sorbitan Isostearate, Silica, Sodium Citrate, Saccharomyces Cerevisiae Extract, Alcohol, Decyl Glucoside, Glutamine, Potassium Sorbate, Polysorbate 80, Chlorphenesin, Lecithin, Cistus Incanus Flower/Leaf/Stem Extract, Gynostemma Pentaphyllum Leaf/Stem Extract, Phenethyl Alcohol, Glycyrrhiza Glabra Root Extract, Phenoxyethanol, Ethylhexylglycerin, Soy Isoflavones, CI 77891 [8]

12. Time Reversing SkinGenist Multi-Cleanser

It cleanses mature skin, removes make-up without drying it out. Encapsulated Genistein soy empowers skin Beauty Genes and helps in counteracting the signs of ageing. It removes make-up, impurities and dirt. Skin doesn't feel tight after cleansing. Skin feels smooth and velvety soft. Its key ingredients include Genistein soy (Gynostemma Pentaphyllum Leaf/Stem Extract) a superior anti-ageing nutrient in a unique encapsulated format to enhance delivery into the skin. A rich blend of moisturising agents (Butylene Glycol, Isohexadecane, Dicaprylyl Carbonate, Caprylic/Capric Triglyceride) due to which skin remains hydrated and nourished after cleansing. Other ingredients are Aqua, Butylene Glycol, Isohexadecane, Dicaprylyl Carbonate, Ethylhexyl Palmitate, Caprylic/Capric Triglyceride, Benzyl Alcohol, Sodium Acrylates Copolymer, Parfum, 1, 2-Hexanediol, Caprylyl Glycol, Tetrahydroxypropyl Ethylenediamine, Acrylates/C10-30 Alkyl Acrylate Crosspolymer, BHT, Mica, Alcohol, Silica, Polysorbate 80, Lecithin, Soy Isoflavones, CI 77891 [9]

13. Time Reversing SkinGenist Instant Smooth Capsules

Its ingredients are Cyclopentasiloxane, Silica Dimethyl Silylate, Dimethiconol, Glycine Soja Oil, Limnanthes Alba (Meadowfoam) Seed Oil, Persea Gratissima Oil, Prunus Persica Kernel Oil, Ribes Nigrum (Black Currant) Seed Oil, Sesamum Indicum (Sesame) Seed Oil, Dimethicone Crosspolymer, Tocopheryl Acetate, Caprylic/Capric Triglyceride, Parfum, Helianthus

Annus (Sunflower) Seed Oil, Phoenix Dactylifera Seed Extract, Glycine Soja Seed Extract, Brassica Campestris Sterols, Bht, Glycyrrhiza Glabra Root Extract, Tocopherol [10]

14. Time Reversing Intense SkinGenistII Day Cream SPF 15

It diminishes wrinkles and reactivates the youth potential of the skin over. It contains genisteinSOY and amino complex which improves skin sagging caused by age-related hormonal changes. Extra-pure encapsulated GenisteinSOY act on the skin's Beauty Genes which maintains plump, supple skin, radiates vitality and youthfulness, improves facial contours and visibly reduces wrinkles. Genistein soy stimulates skin Beauty Genes which are involved in maintaining the skin's beautiful appearance. Its key ingredients include Genistein soy (Soy Isoflavones) a superior anti-ageing nutrient in a unique encapsulated format to enhance delivery into the skin, Amino and Palmitoyl Oligopeptide, Palmitoyl Tetrapeptide-7 boosts the production of collagen, elastin and hyaluronic acid to restore skin density. SPF 15 protects skin against photo-damage and UV-induced free radicals. Other ingredients are Aqua, Glycerin, Butylene Glycol, Ethylhexyl Methoxycinnamate, Octocrylene, Butyl Methoxydibenzoylmethane, Cyclopentasiloxane, Stearyl Dimethicone, Steareth-2, Isohexadecane, Aluminum Starch Octenylsuccinate, Ethylhexyl Salicylate, Steareth-21, PPG-15 Stearyl Ether, Cyclohexasiloxane, Sodium Polyacrylate, Octadecene, Bis-Ethylhexyloxyphenol Methoxyphenyl Triazine, Caprylyl Glycol, Methylparaben, Imidazolidinyl Urea, Parfum, Cetyl Alcohol, Stearyl Alcohol, Propylparaben, Mica, Pisum Sativum Extract, Disodium EDTA, Xanthan Gum, Propylene Glycol, Silica, Sodium Citrate, Alcohol, Decyl Glucoside, Glutamine, Potassium Sorbate, Polysorbate 80, Chlorphenesin, BHT, Carbomer, Lecithin, Sodium Lactate, Cistus Incanus Flower/Leaf/Stem Extract, Gynostemma Pentaphyllum Leaf/Stem Extract, Phenethyl Alcohol, Glycyrrhiza Glabra Root Extract, Polysorbate 20, Soy Isoflavones, Phenoxyethanol, Palmitoyl Tripeptide-1, Palmitoyl Tetrapeptide-7, CI 77891, CI 15510, CI 14700 [11]

15. Time Reversing Intense SkinGenistII Night Cream

It diminishes wrinkles and reactivates youth potential overnight for skin over. It contains genisteinSOY and amino complex which improves skin sagging caused by age-related hormonal changes. Extra-pure encapsulated

GenisteinSOY act on the skin's Beauty Genes which maintains plump, supple skin, radiates vitality and youthfulness, improves facial contours and visibly reduces wrinkles. Genistein soy stimulates skin Beauty Genes which are involved in maintaining the skin's beautiful appearance. Its key ingredients include Genistein soy (Soy Isoflavones) a superior anti-ageing nutrient in a unique encapsulated format to enhance delivery into the skin, Amino and Palmitoyl Oligopeptide, Palmitoyl Tetrapeptide-7 boosts the production of collagen, elastin and hyaluronic acid to restore skin density. Other ingredients are Aqua, C12-15 Alkyl Benzoate, Glycerin, Decyl Oleate, Butylene Glycol, Cyclopentasiloxane, Isohexadecane, Steareth-2, Steareth-21, Cyclohexasiloxane, Butyrospermum Parkii Butter, Cetyl Alcohol, Sodium Polyacrylate, Stearic Acid, Caprylyl Glycol, Phenoxyethanol, Palmitic Acid, Parfum, Imidazolidinyl Urea, Methylparaben, Pisum Sativum Extract, Xanthan Gum, Mica, Propylparaben, Propylene Glycol, Sodium Citrate, Ethylparaben, Silica, Alcohol, Decyl Glucoside, Glutamine, Potassium Sorbate, Arachidic Acid, Lauric Acid, Myristic Acid, Polysorbate 80, Chlorphenesin, Carbomer, Lecithin, Sodium Lactate, Cistus Incanus Flower/Leaf/Stem Extract, Gynostemma Pentaphyllum Leaf/Stem Extract, Phenethyl Alcohol, Glycyrrhiza Glabra Root Extract, Polysorbate 20, Soy Isoflavones, Palmitoyl Tripeptide-1, Palmitoyl Tetrapeptide-7, CI 77891, CI 15510, CI 14700 [12]

16. Time Reversing Intense SkinGenistII Eye Cream

It plumps deep wrinkles and improves the signs of ageing around the eyes for women 55+. It redefines eye contours, restores the skin's density, reduces sagging in the eye area, reduces fine lines and wrinkles, tightens and lifts mature fatigued skin. Genistein soy stimulates skin Beauty Genes which are involved in maintaining the skin's beautiful appearance. Its key ingredients include Genistein soy (Soy Isoflavones) a superior anti-ageing nutrient in a unique encapsulated format to enhance delivery into the skin. Amino and Palmitoyl Oligopeptide, Palmitoyl Tetrapeptide-7 boosts the production of collagen, elastin and hyaluronic acid restores skin density.

CelluForce Complex (Glutamine, Cistus Incanus Extract, Gynostemma Pentaphyllum Leaf Extract) builds skin strength, nourishes cells and protects the youth protein environment. Liquorice (Glycyrrhiza Glabra Extract) decreases the synthesis of melanin which reduces the

appearance of dark spots on the skin. Other ingredients are Aqua, Glycerin, Isopropyl Myristate, Isohexadecane, Butylene Glycol, Theobroma Cacao Seed Butter, Glyceryl Stearate, PEG-100 Stearate, Butyrospermum Parkii Butter, Cetyl Alcohol, Sodium Polyacrylate, Stearyl Alcohol, Phenoxyethanol, Caprylyl Glycol, Tocopheryl Acetate, Imidazolidinyl Urea, Pisum Sativum Extract, Disodium EDTA, Xanthan Gum, Propylene Glycol, Sodium Citrate, Saccharomyces Cerevisiae Extract, Alcohol, Decyl Glucoside, Glutamine, Potassium Sorbate, Polysorbate 80, Chlorphenesin, Methylparaben, Carbomer, Lecithin, Sodium Hyaluronate, Sodium Lactate, Cistus Incanus Flower/Leaf/Stem Extract, Gynostemma Pentaphyllum Leaf/Stem Extract, Phenethyl Alcohol, Glycyrrhiza Glabra Root Extract, Polysorbate 20, Ethylhexylglycerin, Soy Isoflavones, Ethylparaben, Propylparaben, Palmitoyl Tripeptide-1, Palmitoyl Tetrapeptide-7 [13]

METHODOLOGY

FTIR Spectrophotometer - Perkin Elmer - Spectrum RX-IFTIR

FTIR can be routinely used to identify the functional groups and identification/quality control of raw material/finished products. Spectrum RX-I offers fast throughput and rapid access to reliable and dependable IR results. High signal to noise ratio makes FTIR more useful for difficult samples. It has resolution of 1 cm^{-1} and scan range of 4000 cm^{-1} to 250 cm^{-1} . In the normal mode around 10 mg sample is required in the form of fine powder. The sample can be analyzed in the form of liquid, solid and thin films also.

FTIR spectra of Time Reversing Skin Genist Day Cream SPF 15 is obtained at room temperature by using an FTIR Spectrophotometer - Perkin Elmer - Spectrum RX-IFTIR. The spectra is collected in a range from 650 to 4000 cm^{-1} .

RESULTS AND DISCUSSION

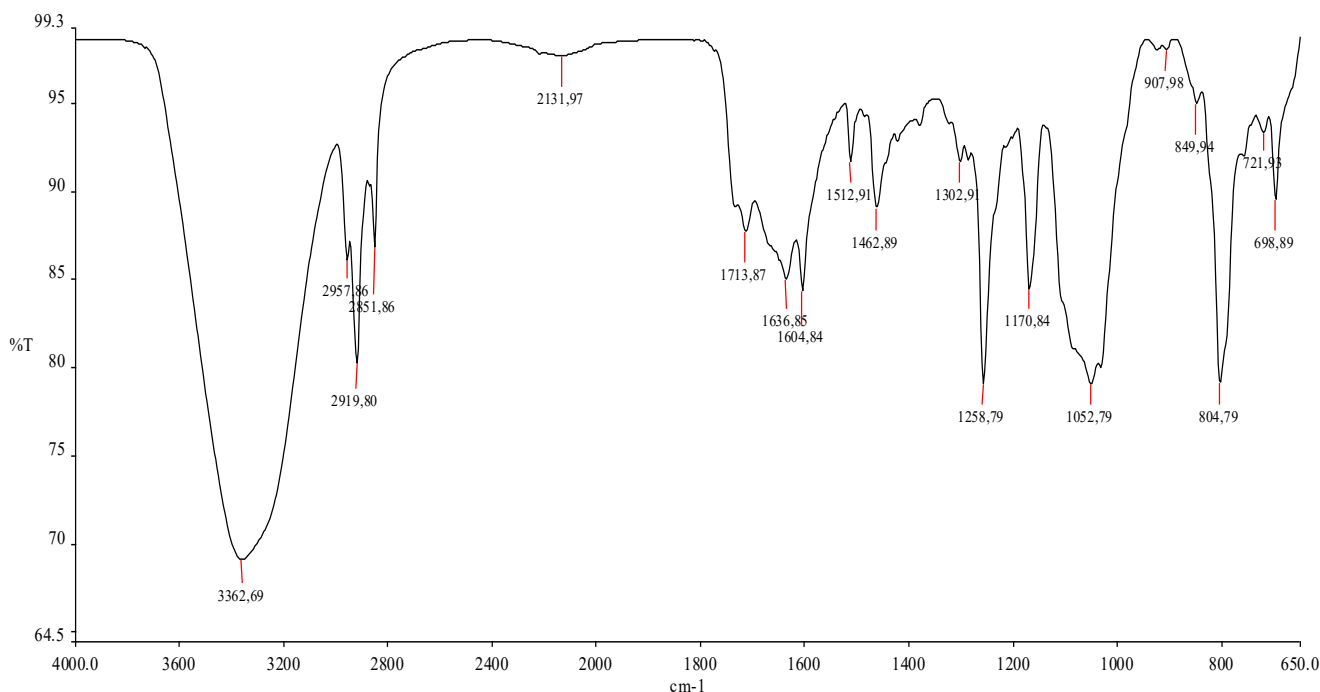
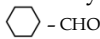











Figure 6. FTIR Spectra of Time Reversing Skin Genist Day Cream SPF 15


Figure 6 shows FTIR Spectra of Time Reversing Skin Genist Day Cream SPF 15. Interpretation of FTIR Spectra of Time Reversing Skin Genist Day Cream SPF 15 can be done as follows:



S.N.	Spectral Region Wave number cm^{-1}	Bond causing absorption	Pattern and Intensity of Band
1	3362.69	Alcohols - Secondary CH-OH	Broad and Strong Intensity
2	2957.86	Alkane - Iso - propyl, Tertiary butyl	Sharp and Moderate Intensity
3	2919.80	Alkane - Iso - propyl, Tertiary butyl	Sharp and Moderate Intensity
4	2851.86	Alkane - Ethyl, n-propyl, Iso - propyl, Tertiary butyl	Sharp and Moderate Intensity
5	2131.97	Aldehydes - Aliphatic Aldehydes $-\text{CH}_2-\text{CHO}$, Aromatic Aldehydes  -CHO	Broad and Low Intensity
6	1713.87	-	Broad and Moderate Intensity
7	1636.85	-	Broad and Moderate Intensity
8	1604.84	Aromatic - Monosubstituted Benzene  - Amines (Cont) - Hydrochloride $\text{C}-\text{NH}_3^+\text{Cl}^-$ Imines - Substituted Imines $>\text{C}=\text{N}-\text{C}$	Sharp and Moderate Intensity
9	1512.91	Amines (cont) - Secondary amines $\text{CH}_2-\text{NH}-\text{CH}_2$, $\text{CH}-\text{NH}-\text{CH}$,  -NH-R, Hydrochloride $\text{C}-\text{NH}_3^+\text{Cl}^-$	Sharp and Low Intensity
10	1462.89	-	Broad and Low Intensity
11	1302.91	-	Broad and Low Intensity
12	1258.79	Alkane - tertiary butyl, Aldehydes - Aromatic Aldehydes  -CHO, Ketones - Aromatic Ketones -  -CO-C, Amines (cont) -  -NH-R	Sharp and Moderate Intensity
13	1170.84	Alkane - Iso-propyl, Ketones - Aliph. Ketones $\text{CH}_2-\text{CO}-\text{CH}_2$, Aromatic Ketones -  -CO-C, Amines - Primary amines $>\text{CH}-\text{NH}_2$, Amines (cont) - Secondary amines - $\text{CH}-\text{NH}-\text{CH}$, Tertiary amines $(\text{CH}_2)_3\text{N}$	Sharp and Moderate Intensity
14	1052.79	-	Broad and Moderate Intensity
15	907.98	-	Broad and Low Intensity
16	849.94	-	Broad and Low Intensity
17	804.79	Alkane - Ethyl, Amines $>\text{CH}-\text{NH}_2$, Amines -  -NH ₂	Sharp and Moderate Intensity
18	721.93	-	Broad and Low Intensity
19	698.89	Aromatic - Meta disubstituted Benzene  Vicinal trisubstituted Benzene 	Sharp and Low Intensity

Interpretation of FTIR Spectra of Time Reversing Skin Genist Day Cream SPF 15 shows presence of various functional groups such as




Alcohols - Secondary CH-OH;

Alkane - Iso - propyl, Tertiary butyl, Ethyl, n-propyl;


Aldehydes - Aliphatic Aldehydes $-\text{CH}_2-\text{CHO}$, Aromatic Aldehydes -CHO;

Amines (cont) - -NH-R, Secondary amines $\text{CH}_2-\text{NH}-\text{CH}_2$, $\text{CH}-\text{NH}-\text{CH}$, -NH-R, Tertiary amines $(\text{CH}_2)_3\text{N}$, Hydrochloride $\text{C}-\text{NH}_3^+\text{Cl}^-$;

Amines - Primary amines -NH₂, $>\text{CH}-\text{NH}_2$;

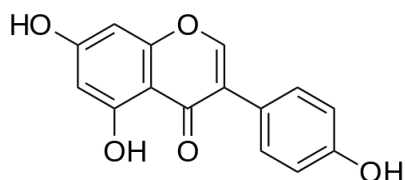
Aromatic - Monosubstituted Benzene , Meta disubstituted Benzene  Vicinal trisubstituted Benzene ;

Imines - Substituted Imines $>\text{C}=\text{N}-\text{C}$;

Ketones - Aliph. Ketones $\text{CH}_2-\text{CO}-\text{CH}_2$, Aromatic Ketones - -CO-C.

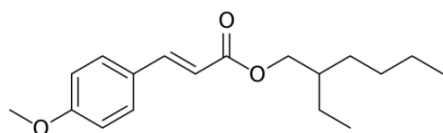
This supports presence of various ingredients as stated in Time Reversing SkinGenist Day Cream SPF 15. Some of which are as given below:

1. Genistein It is an isoflavone that is described as an angiogenesis inhibitor and a phytoestrogen. Genistein is found in a number of plants including lupin, fava beans, soybeans, kudzu, and psoralea being the primary food source,[14,15] also in the medicinal plants, *Flemingia vestita* [16] and *F. macrophylla*, [17, 18] and coffee. [19] It can also be found in *Maackia amurensis* cell cultures. [20] Besides functioning as antioxidant and anthelmintic, many isoflavones have been shown to interact with animal and human estrogen receptors, causing effects in the body similar to those caused by the hormone estrogen. Isoflavones also produces non-hormonal effects.



Genistein

2. Ethylhexyl methoxycinnamate is an ingredient in some sunscreens and lip balms. It is a clear liquid that is insoluble in water. Its primary use is in sunscreens and other cosmetics to absorb UV-B rays from the sun, protecting the skin from damage. It is also used to reduce the appearance of scars. [21] It is often used as an active ingredient in sunscreens combined with oxybenzone and titanium oxide for its use in protection against UV-B rays. [22].



Ethylhexyl methoxycinnamate

Different frequencies of ultraviolet (UV) light can cause different types of damage to our skin. UVB rays causes burning and the redness experienced from too much unprotected exposure to the sun. UVB encourages our skin to produce melanin, the pigment that gives our skin its natural colour. When skin begins to tan, it is a sign of damage and melanin is produced to protect skin. UVA exposure penetrates the layers of the skin very deeply,

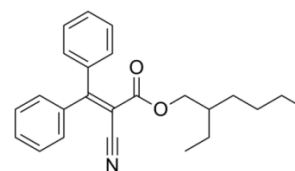
contributing to the undesirable effects associated with ageing. It causes deterioration of collagen and elastin fibres, causing the skin's support to collapse from the inside. This leads to wrinkles on the surface of the skin. Butyl methoxydibenzoylmethane protects the skin from damaging UVA rays. Ethylhexyl methoxycinnamate and butyl methoxydibenzoylmethane in combination shields the skin from the damaging effects of the sun. [23]

3. Ethylhexyl stearate It is oily liquid or waxy solid. In cosmetics and personal care products, it is used most frequently in the formulation of eye makeup, skin makeup, lipstick and skin care products. It acts primarily as lubricants on the skin's surface, which gives the skin a soft and smooth appearance. Stearate esters have the unique properties of low viscosity and an oily nature, which results in a nongreasy, hydrophobic film when applied to the skin or lips.[24]



Ethylhexyl stearate

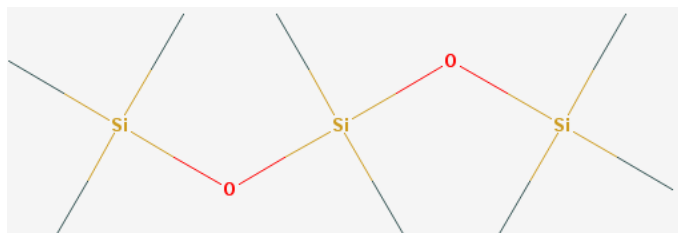
4.Octocrylene is used as an ingredient in sunscreens and cosmetics. It is an ester formed by the condensation of a diphenylcyanoacrylate with 2-ethylhexanol. It is clear, colourless, viscous, oily liquid. The extended conjugation of the acrylate portion of the molecule absorbs UVB and short-wave UVA rays with wavelengths from 280 to 320 nm, [25] protects the skin from direct DNA damage. The ethylhexanol portion is a fatty alcohol, adding emollient and oil-like (water resistant) properties. This organic compound can penetrate into the skin where it acts as a photosensitizer. This results in an increased production of free radicals under illumination. [26]



Octocrylene

5. Dimethicone This medication is used as a moisturizer to treat or prevent dry, rough, scaly, itchy skin and minor skin irritations. Dry skin is caused by a loss of water in the upper layer of the skin. Emollients/ moisturizers work by forming an oily layer on the top of the skin that traps water in the skin. Petrolatum, lanolin,

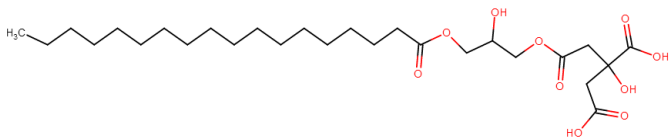
mineral oil and dimethicone are common emollients. Humectants, including glycerin, lecithin, and propylene glycol, draw water into the outer layer of skin. Many products also have ingredients that soften the horny substance (keratin) that holds the top layer of skin cells together (e.g., urea, alpha hydroxy acids such as lactic/citric/glycolic acid, and allantoin). This helps the dead skin cells fall off, helps the skin keep in more water, and leaves the skin feeling smoother and softer. [27]



Dimethicone

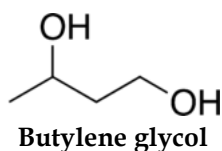
6. Glyceryl Stearate Citrate

It is referred to as Glyceryl Diesters. It is made of glycerin and fatty acids. These ingredients are used in skin care products, moisturizers, and lipstick and other makeup products which gives the skin a soft and smooth appearance.



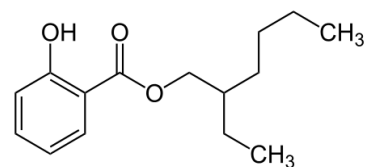
Glyceryl Stearate Citrate

7. Butylene glycol is used as a skin conditioning agent (humectant), solvent and is used to decrease the overall viscosity of a product.



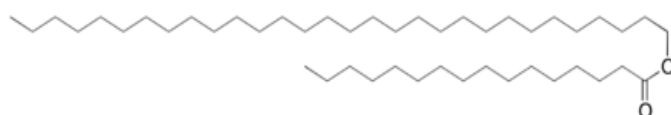
Butylene glycol

8. 2-ethylhexyl salicylate, is an organic compound used as an ingredient in sunscreens and cosmetics to absorb UVB rays from the sun. [28] It is a colorless oily liquid with a slight floral odor. The salicylate portion of the molecule absorbs ultraviolet light, protecting skin from the harmful effects of exposure to sunlight. The ethylhexanol portion is a fatty alcohol, adding emollient and oil-like (water resistant) properties.



2-ethylhexyl salicylate

9. Beeswax (Cera alba) It is a natural wax produced by honey bees of the genus *Apis*. It is a tough wax formed from a mixture of several compounds. It mainly consists of esters of fatty acids and various long-chain alcohols.




Beeswax (Cera alba)

Triacetyl palmitate, a wax ester, is a major component of beeswax. An approximate chemical formula for beeswax is $C_{15}H_{31}COOC_{30}H_{61}$. [29] Its main components are palmitate, palmitoleate, and oleate esters of long-chain (30–32 carbons) aliphatic alcohols, with the ratio of triacetyl palmitate $CH_3(CH_2)_{29}O-CO-(CH_2)_{14}CH_3$ to cerotic acid [30] $CH_3(CH_2)_{24}COOH$, the two principal components, being 6:1. Use of beeswax in skin care and cosmetics has been increasing. A German study found beeswax to be superior to similar barrier creams (usually mineral oil-based creams such as petroleum jelly), when used according to its protocol. [31] Beeswax is used in lip balm, lip gloss, hand creams, salves, and moisturizers; and in cosmetics such as eye shadow, blush, and eye liner. Beeswax is also an important ingredient in moustache wax and hair pomades, which makes hair look sleek and shiny,

CONCLUSION

FTIR can be routinely used to identify the functional groups and identification/quality control of raw material/finished products. Interpretation of FTIR Spectra of Time Reversing Skin Genist Day Cream SPF 15 shows presence of various functional groups such as Alcohols - Secondary $CH-OH$; Alkane - Iso - propyl, Tertiary butyl, Ethyl, n-propyl; Aldehydes - Aliphatic Aldehydes $-CH_2-CHO$, Aromatic Aldehydes C_6H_5-CHO ; Amines (cont) - $\text{C}_6\text{H}_5-NH-R$, Secondary amines $CH_2-NH-CH_2$, $CH-NH-CH$, $\text{C}_6\text{H}_5-NH-R$, Tertiary amines $(CH_2)_3N$, Hydrochloride $C-NH_3^+Cl^-$;

Amines - Primary amines , $>CH-NH_2$;


Aromatic - Monosubstituted Benzene , Meta

disubstituted Benzene , Vicinal trisubstituted Benzene



Imines - Substituted Imines $>C=N-C$;

Ketones - Aliphatic Ketones $CH_2-CO-CH_2$, Aromatic

Ketones - -CO-C.

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