OUEEN GARNET

ADVANCED FRUIT AND VEGETABLES

Prunus salicina Fruit Extract

Delivering "true to nature" hydrophilic plant profiles. Cellular Extraction harnesses the species' water-soluble blueprint of phyto-compounds and their derivatives (the entourage), in their synergistic relationships, as they exist in the cell. Extracted rapidly under high pressure, we maintain the molecules' natural integrity. Committed to conscious manufacturing, Cellular Extracts are created using purified, deionised, rainharvestd water and less plant material than past processes to produce a natural extract, that is eco-sustainable, traceable to source, transparent in composition delivering the brilliance of nature.

The Queen Garnet Plum is a patented non-native Australian species, originally endemic to Japan, but supercharged its profile as a result of adapting to the harsh conditions of the pristine Australian environment. Globally recognised and highly prized as a unique species and source of anthocyanins, this species offers exciting new possibilies for benefits in Cosmetic, Nutraceutical, natural Pharmaceutical, Food and Beverage industry sectors.

Introducing the world first NE Queen Garnet Cellular Extract offering a powerhouse of antioxidants and an interesting profile of anthocyanins, chlorogenic acid, rutin, epicatechin, quercetin and more.

In pursuit to learn more about this species profile, we have listed publicly available, peer reviewed research on these compounds below. This is for educational purposes and is not based on clinical trials of the Cellular Extract. Extracts deliver natural molecules and connects your brand to nature.

WATER-SOLUBLE PHYTO-COMPOUNDS

ANTHOCYANINS

• Skin lightening / Depigmentation potential Human tissue in-vitro studies show inhibition of Tyrosinase activity, a key enzyme in melanogenesis process leading to pigmentation¹

Studies show decreased melanin formation topically¹ Inhibit pigmentation format, blocks the process.

Photo-aging protection

Demonstrated to significantly reduce UVA-13,14 and UVBinduced DNA damage, large variety of photo-ageing and, protein oxidation and lipid peroxidation within reconstituted human skin tissue, dermal fibroblasts and keratinocytes15-2

Reduces redness and sensitivity by inhibiting overexpression and activity of matrix metalloproteinases (MMPs) e.g. collagenase, elastase, thereby protecting the cells from UV-induced apoptosis15-20, presumably through its UVB-dominant absorption capacity reported at approximately 46%21

Anti-aging / Conditioning / Inhibit cell damage Potential anti-aging benefits through protective antiproliferative effects against damaged skin cells, and uncontrolled division thereof3-6,14

Protect cells from premature death/apoptosis induced metastasis control^{3-6,14}

Protection against oxidative stress improving skin longevity and maintains healthy condition3-6,14

Maintains skin viability, collagen and elastin support Protects collagen-producing cells (fibroblasts) against oxidative damage via inhibition of peroxy radicals production8

Captures the environmental and internal heavy metals that induce aging8

Reduces amounts of damaging free radicals, lipid breakage (peroxidation), and DNA damage to prolong good skin, improving flexibility and functionality⁹

Anti-wrinkle and skin flexibility - anti-glycation activity

Prevents glycation process and protein damage¹⁰ Alleviate tissue inflammation, reduced activation of stress cascades to improve skin cell function12

Potent antioxidant properties - improved skin life cycle, function & quality

Supported significant decrease of induced DNA damage and intracellular ROS, along with an increase in cellular defence enzyme^{22,23}

Holds antioxidant capacity towards oxygen radicals^{24,25} and oxidised ferric species²⁶⁻²⁸, scavenging activity towards superoxide²⁹ and peroxynitrite³⁰, inhibition of human LDL oxidation³¹ and lipid peroxidation³⁰, pro-antioxidant activity in form of ability to bind heavy metals such as iron, zinc and copper³² and induction of intracellular defence enzymes33,3

Anti-inflammatory activity - inflammation reduction41

Reported to inhibit the expression of cytokines (molecules being produced in response to stress and

irritation) such as cyclooxygenase-2 (COX-2) and inducible nitric oxide (iNOS) protein, involved in many inflammatory processes, by suppressing NF-[]B through down regulation of MAPK-mediated pathways³⁵⁻³⁸ with almost no change to the antioxidative status in-vivo39,40

QUERCETIN

Anti-inflammatory activity via radical scavenging, inflammatory messengers and signalling pathways' inhibition

Inhibitor of tumour necrosis factor-alpha (TNF- α) production in-vitro, as well as of numerous inflammatory mediators release1,2-5

Inhibits epidermal and liver cyclooxygenase (COX) and lipoxygenase (LOX) activities6 Exerts broad scavenging activity against reactive

oxygen and nitrogen species4,8,9

Maintains skin-tissue vitality both by moderating sun exposure impact and exerting anti-glycation activities

Elevates epidermal cells' (keratinocytes) intracellular antioxidant activity following UVA irradiation, hence suppresses UVA-induced cell death (apoptosis) in human^{10,11} and animal¹² keratinocytes Significantly prevents UVB-induced glutathione (GSH) depletion and tissue degradation in animal model13 Produce sun protection factor (SPF) values similar to those of the classical sunscreen substances benzophenone¹⁴ and homosalate (a reference filter used to establish FDA standards¹⁵

Deemed a desirable compound for incorporation into sunscreen formulations due to excellent UVA/UVB absorption capacity¹⁶

Found to significantly reduce secretion of tissuedegrading enzymes upon UVA or UVB exposure, thereby maintaining skin integrity via topical application17

Represents a useful stabilising additive for the formulation of effective broad-spectrum sunscreens containing widely used and readily available filters1

· Skin appearance enhancer via anti-glycation and potential longevity improvement Presents good penetration of outermost skin layer

(Stratum Corneum) and retention in viable epidermis when incorporated into emulsions19,20 Dose dependently increases production of hyaluronic

acid in epidermis cell line, elevating skin moisture and improve facial wrinkles²¹

- Inhibits AGEs formation via chelating catalytic metal ions and entrapment of both glycation mediators and reactive oxygen species22,23
- Shown to suppress the levels of AGEs and fructoseamines24

Identified as proteasome activator with antioxidant properties that consequently influence cells' lifespan, survival and viability, while creating a rejuvenating effect over senescent human fibroblasts25 Associated with under-eye area skin rejuvenation by

Want to work with natural molecules as they exist in the cell?

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PRODUCT

NE Queen Garnet Cellular Extract Concentrate: ANE0616 Standard 1:10: ANE0616-10

POTENTIAL APPLICATIONS

- Body clays, muds, scrubs
- Body moisturisers, milks, lotions
- Day, night creams, lotions
- Eye contour products, serums
- Face masks, scrubs Face strips, patches
- Generally, suits most cosmetic applications
- Hair, scalp, products, treatments
- Hand, feet creams
- Hand liquid soaps, towelletes, wipes
- Hyperpigmentation creams, serums
- Men, tennage products, serums •
 - Sun care, after sun products

POSSIBILITIES TO TRIAL

- Anti-aging care, antioxidant care
- Anti-glycation, barrier function
- Blemish care (acne prone skin)
- Collagen, elastin support
- Dark pigmented areas, exfoliation
- Fine lines and wrinkles
- Hair growth, maintenance, protection
- Hair maintenance, protection
- Inflammation reduction
- Reactive skin conditions (dermatitis,
- psoriasis, rosacea)
- Skin conditioning, firmness, hydration
- Skin radiance, luminosity

• Skin improvement, wound healing Possibilities are based on compound information and not on the extract information. This information is to assist you in your R&D trial

PRODUCTION

Water/Glycerin Extract Add at the end phase, <40°C Ethanolic option available

PLANT PART : ORIGIN Fruit : Australia

USAGE GUIDE

Concentrate: 1.0 - 2.0% Standard 1:10: 3.0 - 6.0% Wash on/off

formulations

24 months unopened from date of manufacture

COMPLIANCE

INCI: Prunus salicina Fruit Extract 1214268-59-3 CAS:

EC: Not allocated

Cellular Extraction delivers the natural water-soluble compounds of a species. To assist your ingredient research we identified publicly available information on these compounds from other sources and their potential uses. Information is not based on specific clinical trials of the Cellular Extract.





QUEEN GARNET

ADVANCED FRUIT AND VEGETABLES

Prunus salicina Fruit Extract

taking a role in improving dark circles and course wrinkles²

Prevents hair loss and promotes hair follicle • proliferation

Demonstrated to provide effective treatment for alopecia areata (AA) as well as reduce spontaneous onset of AA in preclinical trials27

Shows protective effects against induced toxicity and hair cell damage in-vivo28

Effectively and positively affects human scalp in clinical trials, presenting 214% hair growth compared to control and 94% growth compared to commercially available treatment (Minoxidil), in combination with EGCG29

Potentially holds skin whitening effect

Reducing levels of the melanogenic tyrosinase in-vitro, associated with, but not limited to the activation of proteasome25

RUTIN

- Multifunctional activity as antioxidant, antiinflammatory and organo-protective agent maintaining vascular integrity and well being¹⁻⁴ Holds skin whitening effects
- Anti-melanogenic activity via inhibition of tyrosinase and related proteins5-

Completely inhibits hair follicle cell death and hair bulb regression

When applied in combination with accompanying compounds

Improves skin elasticity and reduces wrinkle formation through anti-glycation activities

With high antioxidant activity, it effectively inhibited the generation of pre-AGE products and exhibited inhibitory effects on the formation of other intermediates and AGEs

Evidently penetrates outermost skin layer (Stratum Corneum)10 and inhibits glycation of type I collagen invitro11

Increased elasticity and decreased the length, area and number of wrinkes12

Holds strong affinity to suppress the formation of both initial and advanced stages of the glycation process as well as collagen crosslinking¹³⁻¹⁵

Effective and safe compound to be used in multifunctional sunscreens

Robustly elevated clinical solar protection factor (SPF) by about 70% when combined into a formulation containing UV filters (sunscreen agents)16

Produce SPF values similar to that of homosalate (a reference UV filter used to establish FDA standards)17

EPICATECHIN

Protects from skin aging due to sun exposure Outstanding antioxidants1,11-16

Demonstrated to protect skin cells against UVB-induced damage by modulating cellular defence enzymes' activity³

Shown to inhibit skin proteins' and tissue degradation caused by damaging UV exposure4

Prevents collagen breakdown by inhibiting collagenase by up to 70%⁵

Maintains skin flexibility and prevents wrinkle formation

Exerts significant inhibitory effect on skin structural proteins glycation6, acting indirectly on the crosslinking process

Exerts significant wound healing properties and alleviates swelling

Reduces swelling and exudates, accelerates wound closure and enhances amounts of fibroblasts and collagen fibres in affected region4,20

Inhibits swelling (edema) and associated pain^{5,8} Counteracts acne via broad spectrum anti-

inflammatory properties

Suppresses inflammation by inhibiting expression and secretion of inflammatory massengers9,15,16,21-23 Reduces sebum secretion in topical treatment of acne¹⁰

FLAVONOID GLYCOSIDES

· Large group of natural substances with various phenolic structures derived from the plant world, well known for their beneficial countless effects on health^{1,1}

Considered indispensable component in a variety of nutraceutical, pharmaceutical, medicinal and cosmetic applications

Possess anti-oxidative, anti-inflammatory, anti-microbial and anti-aging properties coupled with their capacity to modulate key cellular enzyme function

Hold various protective roles against numerous human diseases

PHENOLICS

- Key class of large and diverse dietary compounds, natural antioxidants^{1,3}
- Exhibit a variety of functions, including: Antioxidant activity - neutralise or capture toxic and mutagenic species constantly forming in the skin as by

product of metabolism3-6 Anti-inflammatory properties - Responding to the

exposure to external factors which may cause various types of damage, internal injuries, irritation or allergies7-9 Antimicrobial action - possess potent antifungal, antiviral and antibacterial activity, as an alternative to

broad spectrum antibiotics which may lead to negative influence on skin microflora and resistance of many bacterial strains10-

Anti-aging benefits:

Skin cell renewal - can slow down or even reverse the decreasing capacity of epidermis to replace and detoxify dead cells, which rapidly declines with age¹⁵⁻¹⁷ Stimulation of collagen and elastin synthesis - facilitate maintenance of proper skin structure and integrity of skin tissue, thereby stalling fine line and wrinkle formation18-2

Attenuation of pigment (melanin) production in

epidermis - excessive production of melanin caused predominantly by UV exposure, as well as drugs, chemicals and particular disease states, may lead to dermal disorders24-3

Protection from sun damage (UV radiation) - Restores the antioxidant defence properties of the skin and attenuates the accumulation of DNA alterations31-36 Preventing or attenuating the progression of

certain skin disorders - such as, but not limited

to, psoriasis^{37,38}, rosacea³⁹, acne^{40,42}, allergies^{43,44}, dermatitis⁴⁵ and dermatophytosis^{46,47}

Enhanced healing of incised and chronic wounds and burns - by accelerating the following cascade of regenerative processes48-51

CHLOROGENIC ACID [CGA]

Potent antioxidant and chelating agent stable under UV irradiation

Can serve as topical agent due to not degrading under UVA or UVB irradiation

Significantly attenuated the accumulation of aluminiumbased biotoxicity and associated oxidative stress² Provides effective defence against hydrogen-peroxide oxidative stress to protect tissues from adverse effects³

- Long term skin lightening potential
- Natural suppressor of pigment formation⁴
- · Accelerates wound healing

Reduce your carbon footprint. Extracted using rain-harvested water

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- Sun care, after sun products

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USAGE GUIDE

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Supports wound healing in a dose-dependent manner by enhancing antioxidant defence, fibroblast migration to affected area and angiogenesis (blood vessel formation)5-

- Possesses significant anti-inflammatory activities Suppresses signalling pathways involved in inflammatory response and cell death (apoptosis) by decreasing secretion of pro-inflammatory cytokines Reversed inflammatory cytokine (IL-1β)-mediated downregulation of collagen II10
- Exerts anti-wrinkle activity and maintains skin firmness and flexibility

Inhibits dermal glycation, thus preventing formation of altered rigid protein-sugar crosslinked structures^{11,12} Stimulates up to 2-fold increase in synthesis of collagen, elastin and associated polysaccharides13 Decreases levels of matrix degrading enzymes (MMPs) and increases collagen and hyaluronic acid contents¹⁴

Alleviates skin irritation and redness Prevents UV-induced Erythema (skin reddening)15

ORGANIC ACIDS

- Immense group of multifunctional ingredients encompassing phenolic, carboxylic, phenol-carboxylic and sulfonic acids, as well as weaker acids containing enol, alcohol and thiol residues.
- In addition to their antimicrobial and anti-acne¹ properties, organic acids can also provide skin discolouration benefits1, exfoliating2, emollient3, moisturising⁴ and conditioning properties.
- · Internally, organic acids are known for its antioxidant and scavenging capacities against naturally occurring radicals, suppression of inflammatory agents⁵ and positive effects on microbiome6

SUGARS

Useful as humectants

Hydrophilic, water soluble and in most cases hygroscopic (absorbs water vapour from the air) because their hydroxyl groups form hydrogen bonds with water molecules, resulting in their hydration and dissolution into the hosting skin1

AMINO ACIDS

- Amino Acids (AAs) are the building blocks of proteins and peptides (proteins too small to make up tertiary structures). More than 300 AAs have been described, however only 20 AAs take part in protein synthesis. There are 11 non-essential AAs which our body is able to synthesise, and 9 essential AAs which we must supplement from our diet1
- AAs are generally known to regulate gene expression² and protein metabolism e.g. skin collagen synthesis rates³, enhance wound healing^{4,5}, exert antioxidant activities6, strengthen the immune system7, improve skin barrier function8, maintain skin vitality as anti-aging agents9, contribute to hair viability by constituting the building blocks for hair strand synthesis alongside multiple aspects of hair maintenance and protection¹⁰⁻¹⁵, and play a pivotal role in disease prevention¹⁶⁻¹¹

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CLEAN & FUNCTIONAL – delivering the brilliance of natures design

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Prunus salicina Fruit Extract

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VI CIXOLLN

PRODUCT

NE Queen Garnet Cellular Extract

Body clays, muds, scrubs

Body moisturisers, milks, lotions Day, night creams, lotions

Eye contour products, serums

Generally, suits most cosmetic applications Hair, scalp, products, treatments

Hand liquid soaps, towelletes, wipes

Hyperpigmentation creams, serums

Men, tennage products, serums Sun care, after sun products **POSSIBILITIES TO TRIAL**

Anti-aging care, antioxidant care

Hair growth, maintenance, protection Hair maintenance, protection Inflammation reduction

Reactive skin conditions (dermatitis,

Skin conditioning, firmness, hydration

• Skin improvement, wound healing Possibilities are based on compound information and not on the extract information. This information is to assist you in your R&D trial

Anti-glycation, barrier function Blemish care (acne prone skin)

Collagen, elastin support Dark pigmented areas, exfoliation Fine lines and wrinkles

psoriasis, rosacea)

PRODUCTION

Fruit : Australia

USAGE GUIDE

formulations

EC:

20

17.5

COMPLIANCE

CAS: 1214268-59-3

Not allocated

Water/Glycerin Extract

Ethanolic option available

PLANT PART : ORIGIN

Concentrate: 1.0 - 2.0%

Standard 1:10: 3.0 - 6.0% Wash on/off

INCI: Prunus salicina Fruit Extract

24 months unopened from date of manufacture

Cellular Extraction delivers the natural water-soluble compounds of a species. To assist your ingredient research we identified publicly available information on these compounds from other sources and their potential uses. Information is not based on specific clinical trials of the Cellular Extract.

P: +61 7 3217 1644 www.nutrafruit.com.au

Add at the end phase, <40°C

Skin radiance, luminosity

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Concentrate: ANE0616

Standard 1:10: ANE0616-10

Face masks, scrubs

Face strips, patches

Hand, feet creams

POTENTIAL APPLICATIONS

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mixed peaks - amino acids, organic acids, sugars, phenylacetibnitrile - amygdalin

Flavonoid glycosides - quercetin xyloside, arabinoside m/z 435, deoxy-glucoside m/z 449, glucoonuride m/z 479

The above range of compounds is only a guide as there will be fluctuations in the range available per batch as this is a natural product and reflects the nature of natural differences from harvest to harvest, source to source.

Example of Independent LCMS Extract tested at Analytical Research Laboratory (SCARS)

Mixed peaks - anthocyanins, phenolic acid - chlorogenic acid

Phenolic acids, phenylacetonitrile derivatives

Flavanol - epicatechin

Flavonoid - rutin

10 12.5

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Phenolic acid derivatives

Flavonoid - quercetin glucoside

Phenylpropanoid (anethole)

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Australia

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Forging the future of A-Beauty : POWERED BY NATURE

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