## Ò¢&^||^}&^ÁãiÁ•••^}cãæ‡Á{¦Á•È V@ãiÁá;Á,@Á,^Áad^Á{[\∄,\*Á]]}Å\*Á{{\ád}A

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## BISABOLOL

THE NATURAL BISABOLOL is derived from the essential oil of the Candeia tree through an environmentallyfriendly process of steam distillation and vacuum fractioning. EREMANTHUS ERYTHROPAPPUS Candeia is a tree native to the Atlantic Rainforest in Minas Gerais and Bahia states, at the southeast region of Brazil. Dense Candeia groves result from the natural regeneration in Serra da Mantiqueira and Espinhaço, a region with a highly modified habitat, opened to agriculture and mining centuries ago.

It has very high purity, of at least 95% of the active isomer of Alpha-Bisabolol, although some manufacturers claim synthetic Bisabolol is "nature-identical", it is in fact quite different to the true natural product. Obtained from Farnesol by reaction with Perchloric Acid, Sulfonic Acid and Ketone, the synthetic similar is a racemic mixture of two isomers of Alpha-Bisabolol, containing only 46% of the active levorotatory isomer.

The Candeia Bisabolol offered by Atina since 2005 is the only in the market that has been able to meet the stringent social and environmental certification standards set by the FSC. Since 2009, 100% of Atina's production of Candeia Bisabolol has also been certified as organic by Ecocert, which means that Atina is fully compliant with NOP/USDA standards.

Atina's Bisabolol is the ideal choice for companies seeking the proven greater effectiveness of Natural Bisabolol, supported by guarantees of sustainable sourcing of this natural active ingredient. Uniquely, Atina's sustained management of Candeia and true commitment to Brazil's biodiversity, allow our clients to reinforce their own sustainability credentials by actively contributing to valorize and preserve the Atlantic Rainforest.

#### APPLICATION

Natural Alpha-Bisabolol is suitable for a wide range of cosmetics skin formulations, due to its anti-irritant and soothing effects, associated with anti-microbial and antimycotic benefits. It is a preferred active ingredient for protection against the recurring the stresses of the enviroment on the skin. The most important biological activities of bisabolol are the anti-inflammatory, anti-irritant, anti-bacterial and non -alergenic properties. Candeia - based Bisabolol is one of the most desired natural assets for sensitive skin formulations. This active ingredient is widely used in:

• Shaving preparations products: preshave lotions, aftershave and shaving cream ......0,25 % • Products for acne......0,25 - 0,5% • Suntan gels, creams and indoor tanning Deodorants (underarm) • Hair Care application: hair conditioners, • Makeup applications: mascara, foundations, lipstick, lip balm, make up bases, compact powder ......0,25 - 1% • Treatment of damaged nails and other







#### ALFA BISABOLOL ACTIVITIES

#### EFFECT OF BISABOLOL ON THE SKIN: HYPERPIGMENTATION

**ANTI- INFLAMMATORY ACTIVITY** Although (-) - $\alpha$ -bisabolol, a natural monocyclic sesquiterpene alcohol, is often used as a cosmetic soothing supplement, little is known about its mechanisms of anti-inflammatory effects.

Partner studies show that (-) -  $\alpha$  -bisabolol inhibited production of NO and PGE2 proinflammatory mediators in cells. In addition, (-)- $\alpha$  - bisabolol reduced expressions of iNOS and COX-2 genes by inhibiting the NF-kB and AP-1 signaling pahtway. These partners finding suggests that (-)- $\alpha$  - bisabolol may be used as both a soothing agent and for treatment of inflammatory diseases.

**DESPIGMENTANT ACTIVITY** Hyperpigmentation is the darkening of an area of skin generally due to the increase of melanin. Several factors such as inflammatory skin disorders, allergic contact and irritant contact dermatitis are the main cause of hyperpigmentation. The increase of melanogenic enzyme activity or number of melanocytes may be associated with epidermal and dermal hyperpigmentation. It is know that the cAMP response element (CRE) is envolved in the  $\alpha$  melanocyte - stimulating hormone ( $\alpha$ - MSH) production. A partner study was conducted in order to determine the depigmentation effect of  $\alpha$  - bisabolol using two different assays:

- cAMP response element luciferase reporter assay and melanin assay. The results indicated that  $\alpha$  bisabolol inhibited the CRE activation induced by  $\alpha$ -MSH. Similarly, the compound reduced the melanin content induced by  $\alpha$ -MSH.



#### CERTIFICATES

- · ISO 9001-2008
- EFfCI (European Federation for Cosmetics Ingredients)
- Good Practices Manufacturing (SGS audit)
- FSC Forest Stewardship Council and Ecocert – Organic Product
- AFE ANVISA Pharmaceutical Ingredients & Actives
- Food and Drug Administratio (FDA)
- Generally Regarded as Safe (GRA) status
- $\cdot ~~ {\rm China} ~ {\rm Compliance}$

#### REFERENCES

Guy P. P. Kamatou • Alvaro M. Viljoen A Review of the Application and Pharmacological Properties of a-Bisabolol and a-Bisabolol-Rich Oils

Inhibitory effects of (\_)-a-bisabolol on LPS-induced inflammatory response in RAW264.7 macrophages Seungbeom Kim a, Eunsun Jung a, Jang-Hyun Kim b, Young-Ho Park c, Jongsung Lee <sup>a</sup>,\*, Deokhoon Park <sup>a</sup>,\*

#### INGREDIENT PRODUCT INFORMATION FILE

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INCI Name	Bisabolol
Scientific Name	EREMANTHUS ERYTHROPAPPUS
Origin	Candeia Tree
Appearance	Transparent oily liquid. Colorless to clear yellow. Sweet woody scent.
CAS number	515-69-5; 23089-26-1
EINECS N°	245-423-3
IECIC	02888
Manufacturing Country of Origin	Brazil
Manufacturings Quality System	ISO 9001, EFfCI – SGS, China Compliance, ANVISA AFE.
Shelf Life/ Storage	2 years from manufacture, if stored correctly. Store in a clean, dry, well ventilated warehouse away from odorous materials. Store at ambient temperature. Store away from heat, sparks, or other flame sources.

#### COMPOSITION

CAS Number	INCI Name / IUPAC Name	Scientific Name	Concentration	Function	Origin
515-69-5; 23089-26-1.	Bisabolol	EREMANTHUS ERYTHROPAPPUS	95,0 - 98,0%.	Active Ingredient	Natural
I de	Others bisabolol components		2,0 - 5,0%	Active Ingredient	Natural



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ANTHOCYANOX

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#### ANTHOCYANOX - THE BRAZILIAN RAINFOREST'S NEW PLANT-BASED "SUPER ANTIOXIDANT"

ATINA's new plant-based antioxidant with five times the power of other similar natural ingredient.

Anthocyanox is an anthocyanin standardized wonder-extract from the berries of the Juçara's palm that grows only in Brazil's Atlantic coastal rainforest. It is known to have five times the concentration of anti-oxidants found in Açaí, Brazil's best-known "super-food" that comes from a palm growing in the Amazon.

Juçara, (*Euterpe edulis*) produces a burgundycolored extract that has very high anthocyanin concentration. When used in skin creams and

**Anthocyanox** is a hygroscopic fine powder, purple, soluble in water, ph 3,0 -5,0, powder is a standardized product with high anthocyanin content, about 14,000 ppm, and stable for a period exceeding 18 months.

The major anthocyanins present in the product are cyanidin 3-glycoside and cyanidin 3-rutinoside:



lotions, anthocyanins have a strong antioxidant action and help to prevent aging effects.

Anthocyanins are the driving force behind the free-radical and age-fighting powers of some fruits. They are common in fruits with rich red and purple colors, like grapes and berries, but fruits of tropical palms have far more anthocyanins than any other fruits.

ATINA strictly follows Brazilian guidelines for the collection and processing all forest-based plant extracts such as the Juçara fruit that can only be collected from the rainforest on a sustainable basis and with authorization from CGEN (Brazilian Board for the Management of Genetic Heritage). CGEN rules assure not only protection of natural forests but also sharing of benefits with local communities and small farmers.

ANALYSIS	SPECIFICATION	METHODS
Aspect	hygroscopic fine powder	MET-014
Visual Color	Purple	MET-010
Odor	Characteristic	MET-015
Apparent density (g/cm³)	0,100 a 0,250	MET-012
Solubility	Soluble in water	MET-016
pH (aqueous solution 1%)	3,0 - 5,0	MET-019
Humidity (105° C - %)	Max. 4,0%	MET-020
Total anthocyanins (mg/100g)	Min. 1.500	MET-037
Ether extract by Acid hydrolysis (%)	Max. 5,0	MET-043
Total aerobic bacterial count (UFC/g)	Max. 100	MET-006
Total yeasts and molds count (UFC/g)	Max. 100	MET-006
Fecal coliform	Absent in 1g	MET-006
Total coliform	Absent in 1g	MET-006
Pseudomonas aeruginosa	Absent in 1g	MET-006
Staphylococcus aureus	Absent in 1g	MET-006
Salmonella spp	Absent in 1g	MET-006

**Storage condition:** Store in a cool dry place (<25°), protected from sunlight, heat and humidity

#### ABOUT JUÇARA

Juçara (*Euterpe edulis*) is considered an endangered species because, until a few years ago, Brazilian farmers would hack down these trees to extract the heart of palm they contain. Illegal harvesting of Juçara from native forests and Environmental Conservation Units was also widespread and still occurs in some regions. One heart of palm means one dead Juçara palm tree.

By developing a high value-added application for the Juçara berry that is harvested seasonally without harming the palm tree, ATINA contributes to preservation of this species, as it is now worth more alive than in a salad plate.

ATINA is the only company so far to receive authorization to develop remedies based on the Juçara berry. ATINA has international certificates for international sustainability and organic status.

Laboratory and clinical tests provide strong evidence that anthocyanins are involved in protective and corrective skin processes, factors that when tackled, can delay skin aging of the individual.

 Antioxidant activity: Study by ORAC method (Oxygen Radical Absorbance Capacity) showed that Anthocyanox has antioxidant potential superior to the TROLOX, an analogue of vitamin E.



Comparison of the antioxidant potential of TROLOX and Antocyanox (399911-010 sample) by comparing the Net AUC by ORAC method.

**2. Anti-inflammatory activity**: Inhibitory activity on nuclear factor Kappa B (NF-KB), factor responsible for one of the most important pathways of transcription control of several proinflammatory genes, such as cytokinins, chemokines, adhesion molecules, acute phase proteins and apoptosis regulators (Karlsen at al. (2007)).

#### NEGATIVE MODULATION OF INFLAMATORY FACTORS BY CYANIDINS GLUCOSIDES



 Negative modulation (mean difference) in baseline values for these factors in plasma with mix of cyanidin and delphinidin glucosides and tutinosides (n = 59)

Baseline characteristics of the study participants (n = 59)

Changes from baseline in plasma NF-kg related chemokines, cytokines, and nflammatory mediators in men and women who received supplement with Medox or placebo for 3 wk (Karlsen A, Retterstel L, Laake P, Paur I, Bøhn SK, Sandvik L, Blomhoff R. Anthocyanins inhibit nuclear factor-kappaB activation in monocytes and reduce plasma concentrations of pro-inflammatory mediators in healthy adults, J Nutr. 2007 Aug;137(8):1951-4)

Changes from baseline in plasma NF-kb related chemokines, cytokines, and nflammatory mediators in men and women who received supplement with Medox or placebo for 3 wk (Karlsen A, Retterstøl L, Laake P, Paur I, Bøhn SK, Sandvik L, Blomhoff R. Anthocyanins inhibit nuclear factor-kappaB activation in monocytes and reduce plasma concentrations of pro-inflammatory mediators in healthy adults, J Nutr. 2007 Aug;137(8):1951-4)

### 3. Inhibition of nitric oxide production and expression of iNOS (nitric oxide synthase induced) in endothelial cell culture.



Effect of cyanidin glucosides fractions on iNOS expression. RAW 264.7 cells activated or not with LPS/IFN were incubated with fractions (100 g/ml). iNOS protein was quantified as described in the method section. Results are expressed as X ± S.E.M. (n = 6) of iNOS arbitrary units. Codes used are: M, macrophage without activation; LI, macrophages activated with LPS/IFN-T, total ethanolic extract; E, ethyl acetate fraction; B, butanolic fraction; C3G, cyanidin-3-O-ganglioside; C3R, cyanidin-3-O-rhannoside.\*p < 0.005 when compared with LI group (ANOVA). (Data from: Matheus ME1, de Oliveira Fernandes SB, Silveira CS, Rodrigues VP, de Sousa Menezes F, Fernandes PD. Inhibitory effects of Euterpe oleracea Mart. on nitric oxide production and iNOS expression, J Ethnopharmacol. 2006 Sep 19;107(2):291-6)





BARU (DIPTERYX ALATA) is a tree typical of the Brazilian Cerrado, found in open pastures as well as in the denser forests of Mato Grosso, Goiás and Minas Gerais, and also in other states in central Brazil.

The species is under pressure due to the increasing use of its wood for fence posts or for the construction of rural buildings, in addition to deforestation as a result of the advance of agriculture throughout the Cerrado. Using the fruit and seeds of the Baru reduces the pressure on this species as it adds value to the tree and provides an alternative source of income for the local communities.

The Baru crop varies greatly from year to year. Therefore the regular supply of Baru oil depends on the structure of a wide supply chain in communities from different regions to ensure a steady supply, quality and traceability of the raw material. A Baru tree produces on average 150 kg of fruit per year, which results in only 7 kg of almonds.

#### **OIL CHARACTERISTICS AND BENEFITS**

The cold pressing extraction of Baru oil is done at Atina's plant, followed by the physical processes of bleaching, without heating or reactions. Pressing at low temperature reduces the efficiency of extraction, but preserves the oil quality.

Baru oil is not sticky, is rapidly absorbed by the skin and moisturizes the skin deeply. This effect enhances the action of the lipid barrier and makes the skin smooth and soft.

#### **APPLICATION**

Creams

- Leave-on hair products
- Hair conditioners
- Light oil shampoos
- Shampoos
- Co- wash treatment

#### SUGGESTED CONCENTRATION

#### SPECS AND FACTS

INCI Name: Dipteryx alata Seed Oil Physical state: Liquid at 25°C. Melts at 28-30°C Appearance: Crystalline yellowish liquid. Odor: Similar to peanut oil, but softer. Antioxidant: Baru oil naturally contains 25ppm Tocopherol.

FATTY ACIDS COMPOSITION	BARU OIL (%	)
Palmitic	C16:0	> 7,33
Stearic	C18:0	> 5,20
cis-Oleic (ω-9)	C18:1	> 47,94
Linoleic (ω-6)	C18:2	> 25,45
Arachidic	C20:0	> 1,39
Gadoleic	C20:1	> 2,1
Behenic	C22:0	> 3,68
Lignoceric	C24:0	> 4,21

#### HAIR CARE APPLICATIONS

Baru oil has a unique composition in high molecular weight fatty acids (above C18). With more than 11% of C20 to C24 fatty acids. This makes a special oil for hair treatment as can be observed in the efficacy tests in comparison with silicon widely used for such purposes at the same concentrations.

In studies conducted with baru oil, which was evaluated gloss, external moisturizing and thermic protection, Baru Oil presented excellent performance when compared with silicone. It is confer to formulator an excellent alternative for formulations silicon free







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