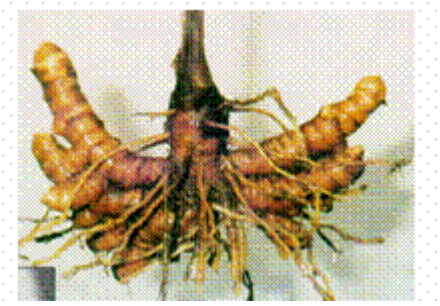
SABIWHITE®

A NATURAL SKIN-LIGHTENING AGENT

PRODUCT WRITE-UP

SabiWhite™* (INCI: Tetrahydrodiferuloyl-methane) is a color-free natural extract derived from *Curcuma longa* (Turmeric) roots.

Laboratory studies revealed that SabiWhite™ is an effective skin lightening agent with multifunctional topical benefits.[1] The extract is safe for topical use with no irritant or sensitization side effects.[2]



Curcuma longa (turmeric) Roots

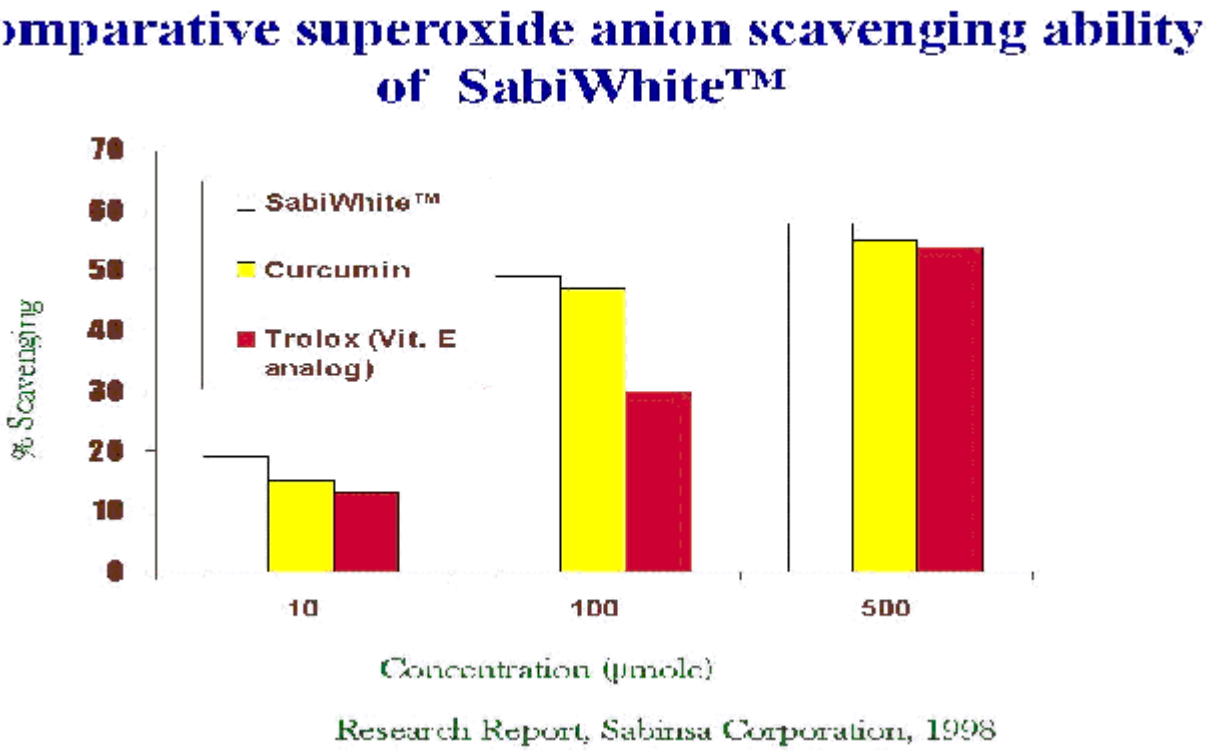
SabiWhite™ is chemically Tetrahydrocurcumin, which is a major metabolite of curcumin, (the yellow pigment of turmeric), in the body.[3]

TETRAHYDROCURCUMIN

Salient Features of SabiWhite™:

Antioxidant action:

SabiWhite™ offers effective topical antioxidant protection. Its antioxidant action is of a comprehensive "bioprotectant" nature, efficiently preventing the formation of free radicals, while quenching pre-formed ones as well. This dual action protects the skin cells from damage by UV radiation and the resultant inflammation and injury with far reaching beneficial effects on overall health and well being. The free radical scavenging activity of SabiWhite™ was found to be superior to that of the synthetic vitamin E analog, Trolox.[4]

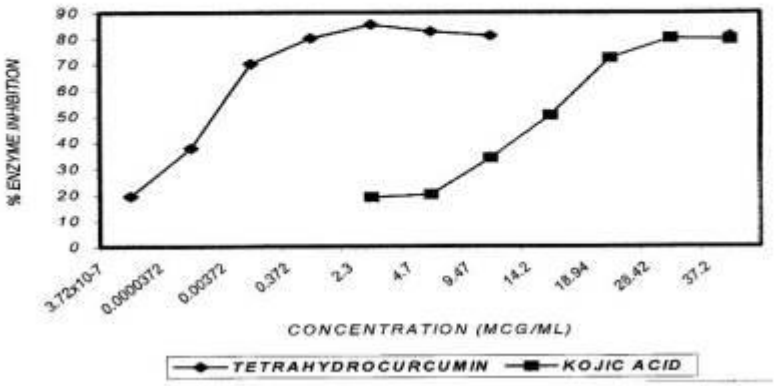


Curcuminoids are reported to protect normal human keratinocytes from hypoxanthine/xanthine oxidase injury in in-vitro studies. This study suggests that curcuminoids and therefore SabiWhite™ offer protection to the skin and could be included in as functional antioxidants in topical preparations[5].

Luminosity Booster and Powerful Tyrosinase Inhibitor

Preliminary *in vitro* studies indicate that SabiWhite™ efficiently inhibits tyrosinase, the rate limiting enzyme in the synthesis of melanin. Its efficacy is superior to that of commonly used natural skin lightening agents such as kojic acid, and of related compounds (Table 1).

Comparative Tyrosinase Inhibitory Activity of SabiWhite™ and Kojic Acid



Luminosity Boosting Properties of SabiWhite™

Table 1:Tyrosinase activity of single entity Tetrahydrocurcumin and analogs.

Compounds	Inhibitory concent. IC_{50}(mcg/ml)	(as % of THC)
Tetrahydrocurcumin (THC)	0.000492	100
Tetrahydrocurcuminoids	0.0493	0.99
Curcuminoids	0.102	0.482
Tetrahydro-demethoxycurcumin	0.0693	0.709
Tetrahydro-bisdemethoxy curcumin	0.2386	0.206
Curcumin	0.730	0.067
De-methoxycurcumin	1.196	0.041
Bis-demethoxycurcumin	0.93	0.052
Glabridin 40%	0.045	1.09
Kojic acid	9.14	0.0054
Vitamin C	12.2	0.0040

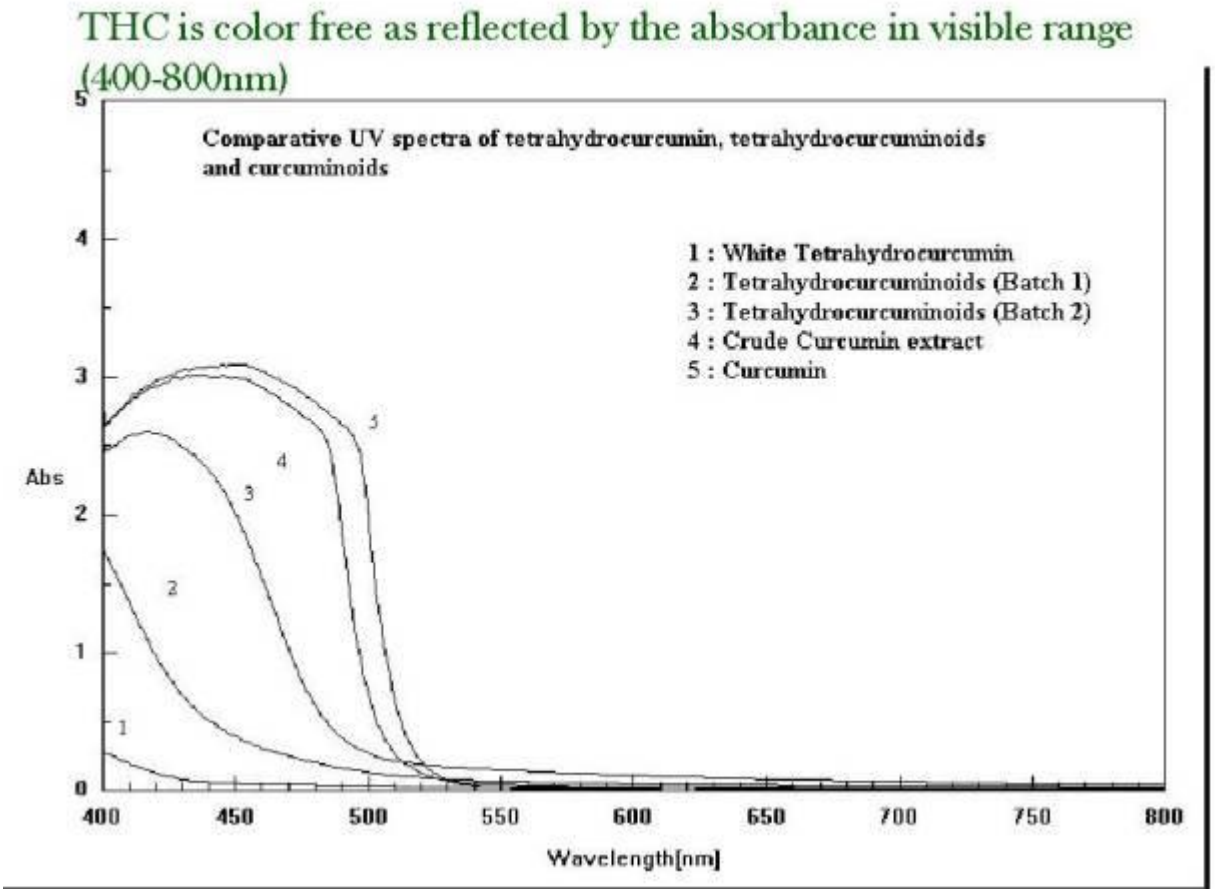
* US Patent Pending

Anti-inflammatory and UV protectant effects

Laboratory studies revealed that SabiWhite™ offers topical protection against UVB induced inflammation and the resultant damage to the skin. These properties are particularly useful in antiaging, skin lightening, sun care and after sun care formulations.

Cosmeceutical applications:

The culinary spice, turmeric, has a rich tradition of topical use in South Asia. However, it's brilliant yellow color, effected by the curcuminoids, does not blend well with currently manufactured cosmetics. SabiWhite™ (Tetrahydrocurcumin, THC) does not pose this problem as it is color free, and can be conveniently dispersed into cosmetic formulations.



Free radical chain reactions are implicated in most degenerative biological reactions. Free radicals on the surface of the skin, generated through exposure to ultraviolet radiation, chemicals or other environmental stress factors catalyze aging of the skin. SabiWhite™ scavenges free radicals, and prevents their formation. The anti-inflammatory effects of SabiWhite™ combined with the efficient antioxidant action is useful in anti-aging formulations and in topical formulations designed to maintain general skin health and integrity. The powerful tyrosinase inhibitory activity of SabiWhite™ could also slow down melanogenesis, thereby lightening the skin tone. Use levels range from 0.1 to 2% w/w.

A sample formulation is presented here.

Skin Whitening Cream

	Ingredients	%w/w	Function

A	Isopropyl palmitate	4.0	Emollient
	Caprylic/Capric triglycerides	5.0	Emollient
	Glyceryl stearate	1.0	Emollient
	Cetearyl octanoate	3.0	Emollient
	Dioctyl adipate	1.0	Emollient
	Dimethicone	1.0	Slip aid
	Steraeth 21 (BRIJ 721)	1.0	Emulsifier
	Steareth 2 (BRIJ 72)	0.5	Emulsifier
B	Glycerin	3.0	Humectant
	Tetrasodium EDTA	0.02	Chelating agent
	Imidurea	0.15	Preservative
	Sodium methylparaben	0.2	Preservative
	Sodium propylparaben	0.02	Preservative
	Demineralized water	Qs	Diluent
	Citric acid(10%)	Qs	Acidulant
C	SabiWhite™*	0.25	Active
	Cosmoperine®*	0.05	Permeation enhancer
	Ethanol	2	Solvent
D	FLOCARE ET 30	5.0	Viscosity modifier

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Properties:

Appearance: Creamy white emulsion

PH: 5.4 – 6.0

Procedure:

1. Combine Part A ingredients and heat it to 70-75^{o} C
2. Combine Part B ingredients in a separate vessel and heat it to 70-75^{o} C
3. Add part A to Part B with continuous agitation
4. When the temperature is 45^{o}C add Part C
5. Add Part D and mix to form a homogenous mixture

References:

1. **Research Report**, Sami Labs Ltd., 2002

2. **Research Report**, Sabinsa Corporation, 2003

3. Pan, M.H. et al. (1999) Biotransformation of curcumin through reduction and glucuronidation in mice. ***Drug Metab. Dispos.*** 27(4):486-94.

4. **Research Report #786**, Sabinsa Corporation, 1998

5. Bont'e, F. et al. (1997) Protective effects of curcuminoids on epidermal skin cells under free oxygen radical stress. ***Planta Med.*** 63(3):265-266.

6. **Research Report**, Sabinsa Corporation, 2000

Protocols of studies on cosmeceutical products performed /sponsored by Sabinsa Corporation are based on ***alternatives to animal testing****. Any references to animal tests appearing in product informational materials are related to information from published scientific literature compiled therein*

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