ACB Tonka Bean Bioferment PF

Active Concepts
Tomorrow's vision… *Today*!®

chromatography + phototherapy
blurs wrinkles + fine lines,
antioxidant protectant
skin illuminating

BACKGROUND

If I asked you how to get glowing, luminescent skin, you'd most likely advise me to stay out of the sun. What if we could harness the power of the sun to benefit our skin and help improve its appearance? Nature has provided a way to take damaging UV light and reissue it as visible light that can enhance the results of cosmetics used with sunlight.

Phototherapy, or light therapy, is the exposure to sunlight or to specific wavelengths of light for therapeutic effects and has been shown to be effective against visible lines and wrinkles[1]. The development of phototherapy devices has allowed for effective and safe treatment against various skin conditions[1]. Once only available in the doctor's office, phototherapy devices have found their way into our homes. In the age of do-it-yourself beauty, the need for an active ingredient that is able to diminish the signs of aging when introduced to UV light is undeniable.

Originating in the South American region of Guyana, Tonka beans are seeds of the *Dipteryx odorata* tree and are used commercially as a substitute for vanilla. Tonka beans possess fluorophores that absorb light in the UV spectra. This light absorbing ability makes **ACB Tonka Bean Bioferment PF** an ideal additive for creams used with phototherapy devices to harness the positive effects of UV rays.

SCIENCE

Over time, the proteins in our skin cross-link and diminish the refraction of light. This reduction in protein density causes our skin to appear dull and washed out. Active Concepts has isolated polyphenols from Tonka beans which, when activated by UV rays, absorb light in the invisible spectra (UVA and UVB wavelengths) and emit light in the visible spectra. This allows us to harness the power of UV rays which typically harm our skin and use them to emit light in the visible spectrum to increase luminescence so our skin will not appear as dull and fine lines will not appear as visible. The polyphenols will also help to even our skin tone and mask imperfections while providing antioxidant protection from extrinsic damage, which contributes to aging.

Code Number: 20431PF

INCI Name: Lactobacillus/Dipteryx Odorata Seed Ferment Filtrate
INCI Status: Conforms
REACH Status: Complies
CAS Number: 90028-06-01
EINCS Number: 289-793-4

Origin: Botanical
Processing:
GMO Free
No Ethoxylation
No Irradiation
No Sulphonation
Additives:
Preservatives: None
Antioxidants: None
Other additives: None
Solvents Used: Water
Appearance: Opaque, Viscous Liquid
Soluble/ Miscible: Water Soluble
100% Biodegradability
Microbial Count: < 100 opg,
No Pathogens

Suggested Use Levels: 1.0 - 2.0%
Suggested Applications:
Anti-wrinkle, Chromatherapy, Phototherapy, Protectant, Anti-aging

Benefits of **ACB Tonka Bean Bioferment PF**

- Chromatherapy
- Anti-Wrinkle
- Phototherapy
- Protectant
- Anti-Aging Effects
- Ayurveda Marketability

ACB Tonka Bean Bioferment PF

BENEFITS

Chromatherapy, or color therapy, is the use of colored light to treat various conditions. UV rays activate **ACB Tonka Bean Bioferment PF** and cause it to emit visible blue light to counteract dulling effects of other wavelengths. A major cause of skin aging is a chronic micro-inflammation triggered by UV radiation and external pollutants. Recent studies have shown that blue light (420nm) can improve inflammatory lesions by inhibiting pro-inflammatory cytokines[2]. Other research shows that blue light exhibits phototoxic effects on the heme metabolism of Propionibacterium acnes to inhibit this bacteria that causes acne on our skin[3].

ACB Tonka Bean Bioferment PF emits light in violet, green, blue, yellow, and red visible light spectra. This indicates that **ACB Tonka Bean Bioferment PF** is capable of increasing luminescence so skin appears healthy and revitalized, as well as helping skin appear smooth and even by illuminating wrinkles and dark circles while evening skin tone and discolorations. **ACB Tonka Bean Bioferment PF** is water-dispersible so it can be incorporated into a variety of cosmetic and personal care preparations.

EFFICACY DATA

Efficacy testing for **ACB Tonka Bean Bioferment PF** shows that it is capable of absorbing light in the UVA and UVB spectra. Additionally, fluorometer testing reveals that it is capable of emitting light in the violet, green, blue, yellow, and red visible light spectra. These studies indicate that the product is capable of increasing luminescence so skin will appear healthy and revitalized.

The results from Figures 1 and 2 indicate that **ACB Tonka Bean Bioferment PF** is capable of emitting light in the visible spectrum. The continuous lines on the graphs indicate that the emission of light begins at 405 nm, and continues on through 590 nm. This means that the light was also emitted at 420 nm, which is blue light. When tested in water as the solvent, 10% **ACB Tonka Bean Bioferment PF** emitted so much light in the visible spectra that it was actually too high to detect using the fluorometer. This study was performed to illustrate that following excitation, **ACB Tonka Bean Bioferment PF** is capable of emitting light in the visible spectra.

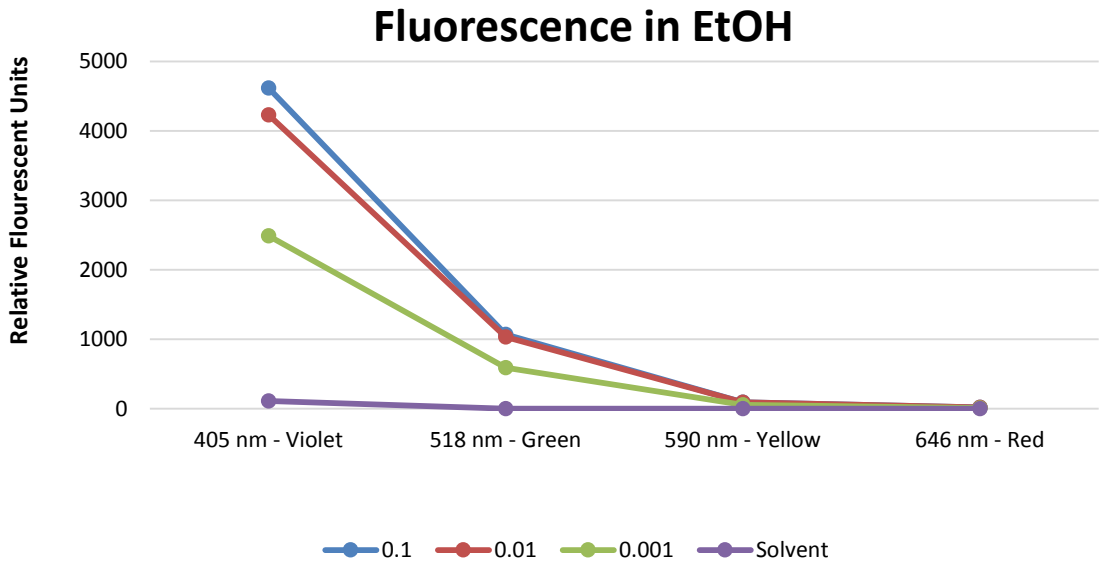

Figure 1. Overall Fluorescence in Ethanol

ACB Tonka Bean Bioferment PF

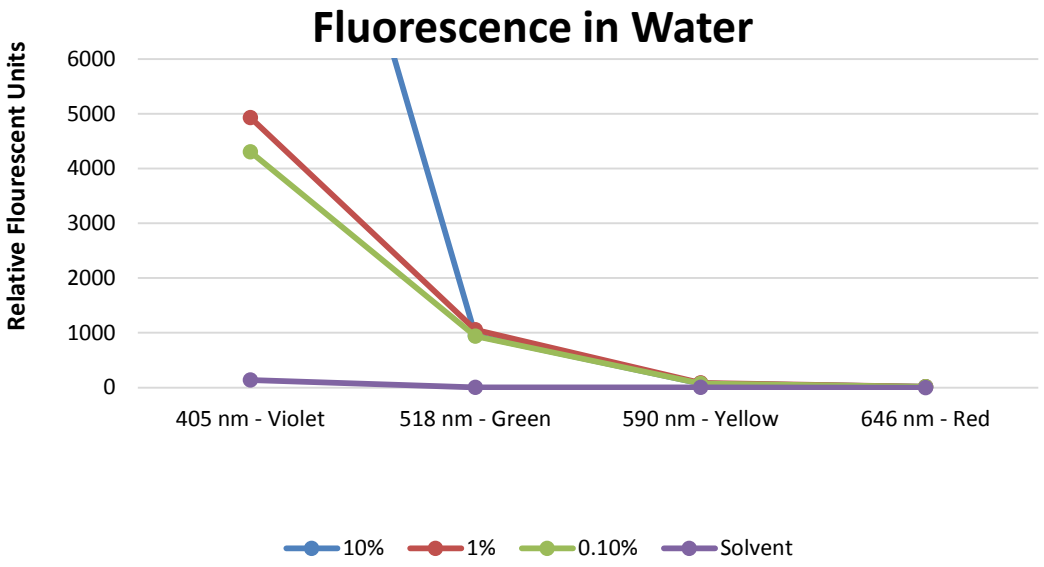

Figure 2. Overall Fluorescence in water

A fluorometer was used to determine the fluorescence of **ACB Tonka Bean Bioferment PF**. Four emission wavelengths were tested: 405nm (violet), 518 nm (green), 590 nm (yellow), and 646 nm (red). Trials were run in triplicate and the results from Figure 3 indicate that **ACB Tonka Bean Bioferment PF** is capable of absorbing invisible UV light and emitting light in the visible spectrum.

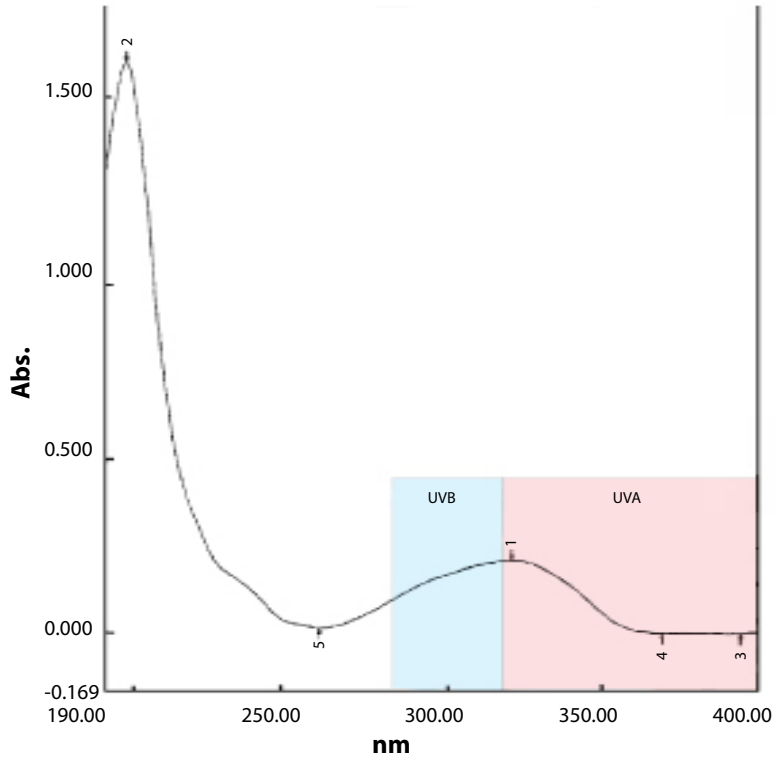

Figure 3. UV Absorbance

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As evidenced in Figure 4, **ACB Tonka Bean Bioferment PF** exhibited antioxidant activity comparable to 200µM Trolox®. The antioxidant capacity of **ACB Tonka Bean Bioferment PF** increased as the concentration increased, as a result we can assure that its ability to minimize oxidative stress is dose dependent. **ACB Tonka Bean Bioferment PF** was designed to have anti-wrinkle and chromatherapy properties. With the present study we can confirm that this unique ingredient is not only capable of providing functional benefits, but it is also capable of providing potent antioxidant benefits when added to cosmetic applications.

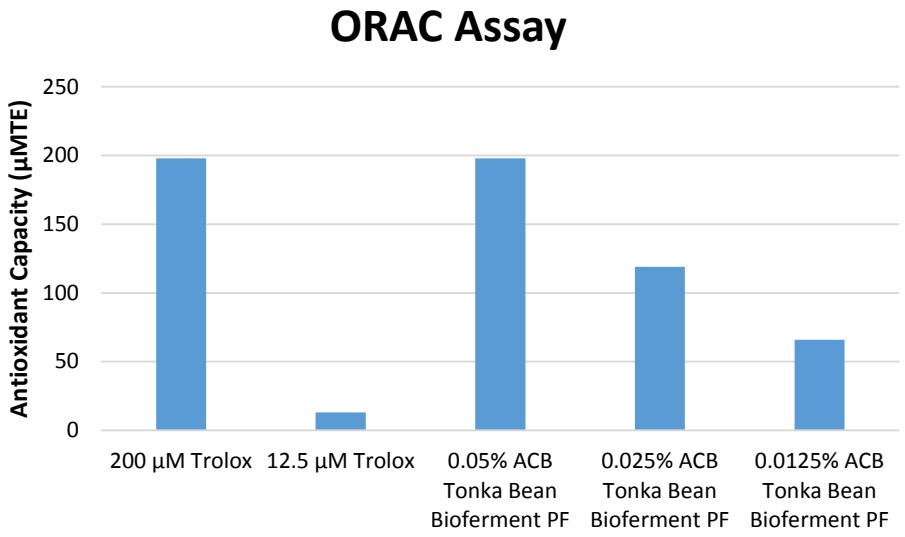

Figure 4. Antioxidant Capabilities

Figure 5 illustrates the results of a 4 week moisturization efficacy study of **ACB Tonka Bean Bioferment PF** on skin. Moisture levels were improved by 36.9% after 24 hours and by 52.7% after 4 weeks when compared to the untreated control. These results indicate that **ACB Tonka Bean Bioferment PF** is capable of increasing moisturization when compared to the untreated control.

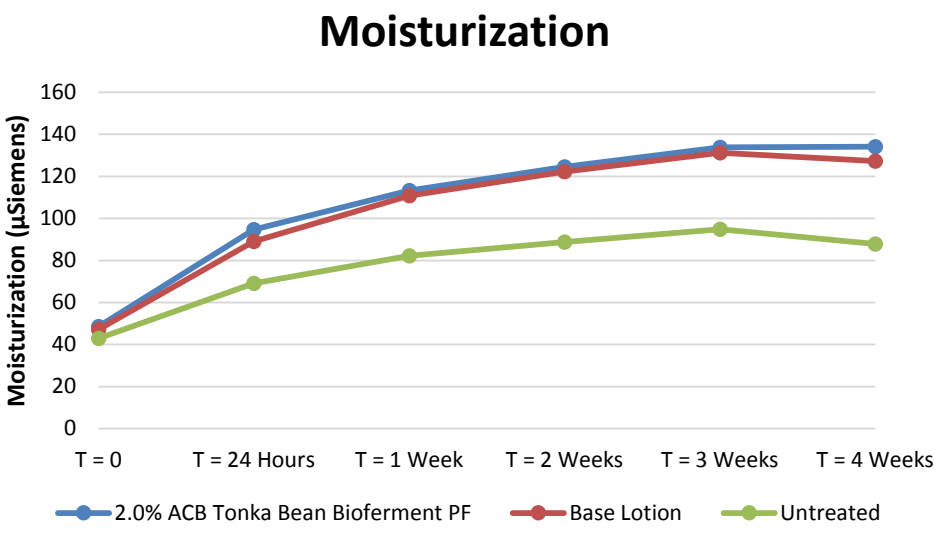

Figure 5. Average Increase in Moisturization

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Another study was conducted to measure collagen density of the skin affected by the application of **ACB Tonka Bean Bioferment PF**. The results of Figure 6 show a general trend increase of skin collagen, with an improvement of 11.3% after 4 weeks of use of **ACB Tonka Bean Bioferment PF**. To support these finding further, the results from Figure 7 show a 9.7% change increase in collagen density on areas treated with the control base lotion and those treated with **ACB Tonka Bean Bioferment PF**. This data indicates that **ACB Tonka Bean Bioferment PF** has the ability to boost collagen density, which in turn maintains the structural integrity of the skin barrier.

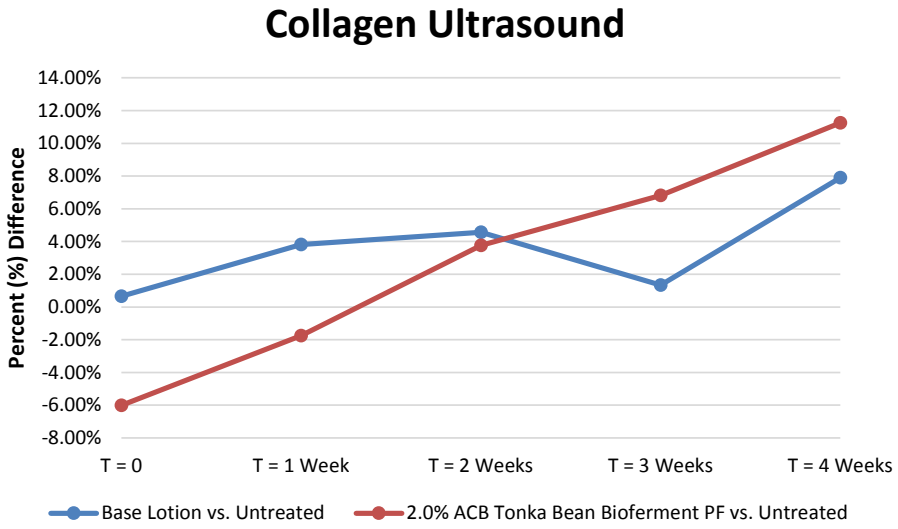

Figure 6. Improvement in Skin Collagen Density

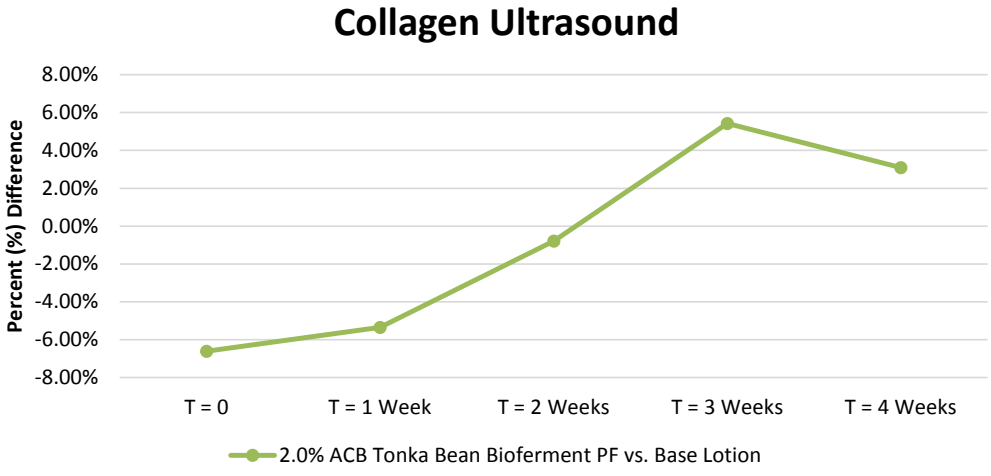

Figure 7. Differences in Skin Collagen Density

References

1) Trelles M. Journal of Cosmetic Dermatology. Phototherapy in anti-aging and its photobiologic basics: a new approach to skin rejuvenation. 5(1):87-91
2) Lask et al. 2005. Journal of Cosmetic and Laser Therapy. The utilization of nonthermal blue (405-425 nm) and near infrared (850-890 nm) light in aesthetic dermatology and surgery – a multicenter study. 7(3-4):163-70
3) Shnitkind et al. 2006. Journal of Drugs in Dermatology. Anti-inflammatory properties of narrow-band blue light. 5(7):605-10

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