

ACB Wasabi Extract PF



Traditional
Inhibit DNA Damage
Botanical
antioxidant
Antimicrobial activity
Scavenger
Superoxide Dismutase

BACKGROUND

Wasabi is generally only considered in the realm of nutrition, but the plant has a variety of other applications than are traditionally believed. Aside from its accompaniment to sushi, which is produced through the grinding of the roots, wasabi and wasabi based by-products have risen in popularity as cosmetic and personal care raw ingredients. In its country of origin, *Wasabia japonica*, the most popular cultivar, has been used extensively in holistic and homeopathic medications.¹ With applications and claims from standard diet supplementation, to a topical solution for a mentholated-esque soreness relief, Wasabi's popularity and origin is nothing short of standard.

In the western world, Wasabi's unique exotic origin coupled with its sustainable eastern cultivar (and its litany of benefits of course) make it a prime material for cosmetic applications and marketability. Wasabi has been shown to exhibit powerful antimicrobial properties and many believe it's accompaniment to sushi was as a non-traditional antimicrobial to kill any detrimental bacteria left on the raw fish, though many scientific studies have been unable to corroborate these claims.² It has recently been brought to light that the more commonly examined and studied plant material has been *Cochlearia amoracia* or Horseradish which constitutes much of the commercially sold powdered wasabi. Though, studies that have been conducted using fresh *Wasabia japonica* have shown a variety of fascinating properties.

SCIENCE

There are multiple species of the primary active compounds found in *Wasabia japonica*, the most important to examine are oxido-reductases, isocyanates and glucosinolate's. The oxido-reductases have a number of effects, including exhibiting the same properties associated with Superoxide Dismutase (SOD), a powerful antioxidant.

Code Number: 20351PF

INCI Name: Lactobacillus/Wasabia Japonica Root Ferment Extract

INCI Status: Conforms

REACH Status: Complies

CAS Number: N/A

EINECS Number: N/A

Origin: Botanical

Processing:

GMO Free

No Ethoxylation

No Irradiation

No Sulphonation

Additives:

Preservatives: None

Antioxidants: None

Other additives: None

Solvents Used: Water

Appearance: Yellow to Light

Green Liquid

Soluble/ Miscible: Water Soluble

88.05% Biodegradability

Microbial Count: < 100 CFU/g,

No Pathogens

Suggested Use Levels: 1.0 - 5.0%

Suggested Applications:

Antioxidant, Antimicrobial

Benefits of ACB Wasabi Extract PF:

- Versatile in Formulations
- Antioxidant Capabilities
- Powerful Antimicrobial

ACB Wasabi Extract PF

Superoxide Dismutase in conjunction with peroxidase are responsible for the scavenging and neutralization of Superoxide and Peroxide radicals, both of which have been identified as principle factors contributing to the exogenous aging process.³

A glucosinolate is basically a sulfur-bearing glycoside, but in the case of Wasabi, particular attention has been focused on Sinigrin (allyl glucosinolate). When the Wasabi plant tissue becomes damaged, the enzyme myrosinase is activated, converting Sinigrin to allyl isothiocyanate (AITC), the compound responsible for the organoleptic properties typically associated with Wasabi. Sinigrin has been shown to directly inhibit DNA from a variety of sources including Fenton reaction induced peroxidation, UVC (240 nm), and UVA (365 nm) radiation. Inhibition of oxidative DNA damage *in-vitro* by extracts of Brussel sprouts. Unlike more typical antioxidants such as Vitamin, Sinigrin does not show pro-oxidant effects at higher concentrations.² Allyl Isothiocyanate in wasabi exhibits cidal effects against a wide range of organisms ranging from nematodes, to fungus and bacteria. At levels as low as 1% **ACB Wasabi Extract PF** will demonstrate significant antimicrobial properties in formulations.

In addition, active Bio-Flavonoids and polyphenolic compounds such as gallic acid, or tannin help contribute to the antioxidant capability of **ACB Wasabi Extract PF**. Though nutritionally, flavonoids have innately low absorbance levels, as a topical substance they can exhibit interesting properties on the skin and hair.³ As cofactors, they play an important complementary role to the already potent antimicrobial properties of Wasabi, but research has also suggested they can aid in photoprotection, and add a variety of perceived sensorial properties.

BENEFITS

Wasabia japonica, the more bioactive counterpart to the *Cochlearia amoracia* maintains all of the known understood properties of horseradish with significantly more well founded and backed antimicrobial and antioxidant capabilities. Adding **ACB Wasabi Extract PF** to formulations will be beneficial if you are seeking a highly marketable origin with sustainable roots as well as effective and well understood antimicrobial and antioxidant capabilities.

EFFICACY DATA

Along with its other broad spectrum Antioxidant capabilities, **ACB Wasabi Extract PF** exhibits an effect on the potent Superoxide Dismutase (SOD) molecule. As seen below, in Figure 1, **ACB Wasabi Extract PF** is shown to increase SOD activity based on its concentration.

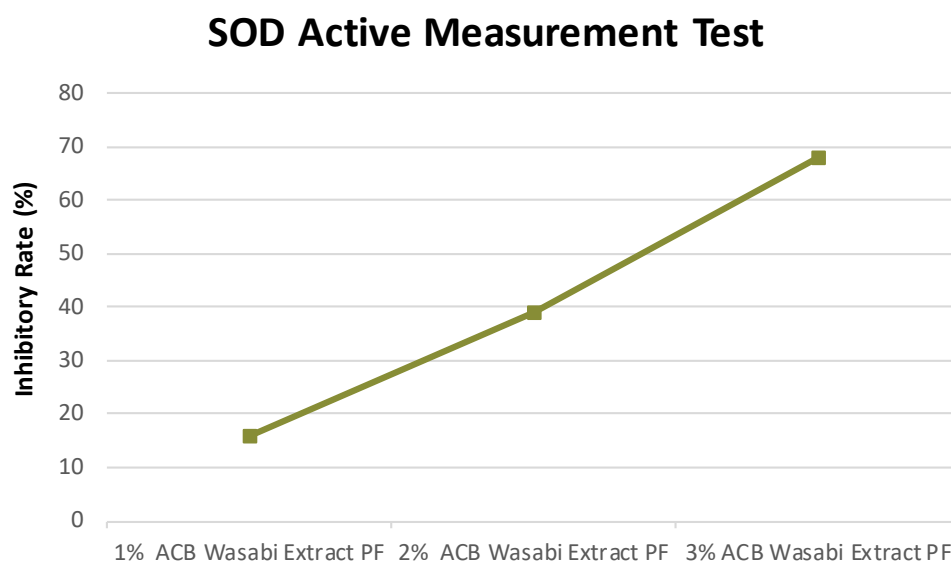


Figure 1. Superoxide Dismutase Activity

ACB Wasabi Extract PF

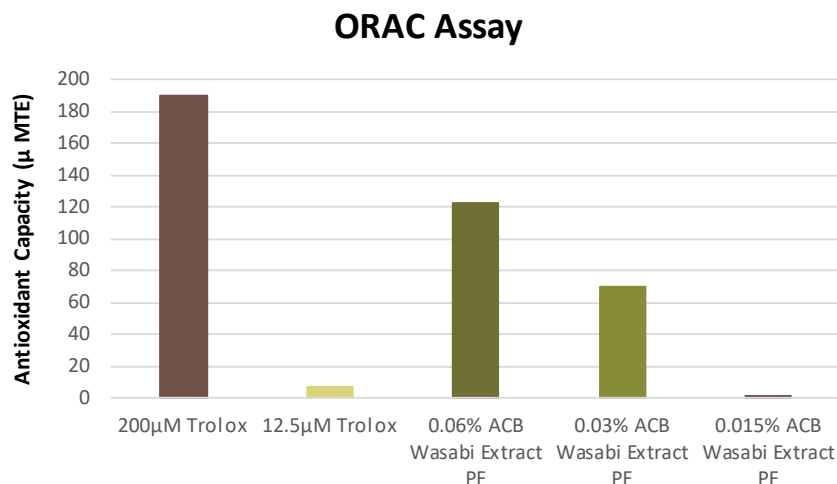


Figure 2. Antioxidant Capability

As shown in Figure 2, **ACB Wasabi Extract PF** exhibited potent antioxidant activity comparable to Trolox®. The antioxidant capacity of **ACB Wasabi Extract PF** increased as the concentration increased, as a result we can assure that its ability to minimize oxidative stress is dose dependent. **ACB Wasabi Extract PF** was designed to provide anti-microbial and anti-oxidant properties.

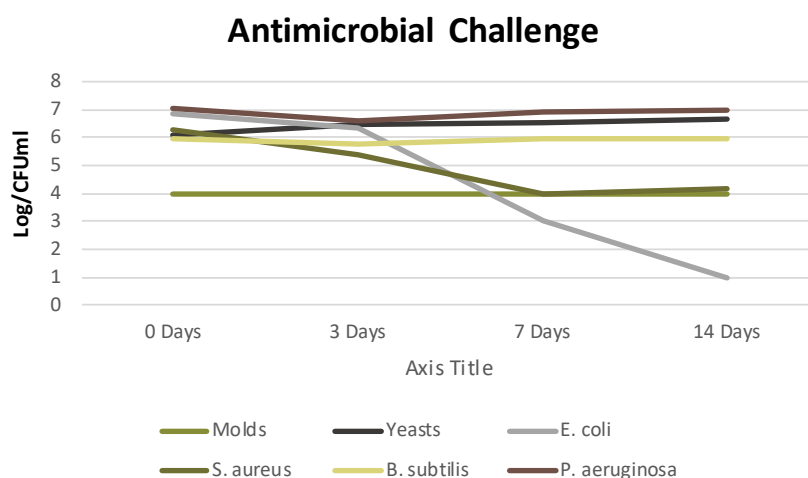


Figure 3. Antimicrobial Capability

Many of the antimicrobial claims surrounding Wasabi had yet to be quantified, using an antimicrobial challenge test with **ACB Wasabi Extract PF** (sourced from genuine *Wasabia japonica*) it became clear that Antimicrobial benefits are present. **ACB Wasabi Extract PF** was effective against a variety of microorganisms but particularly effective against *E. coli* (a predominantly pathogenic bacteria) *S. aureus*, and inhibited the growth of others.

References

- 1) Shin, I. et al. 2004. International Journal of Food Microbiology. Bactericidal activity of wasabi (*Wasabia japonica*) against *Helicobacter pylori*. 94(3): 255-261
- 2) Shang-q, H. et al. 2011. Journal of Henan Normal University (Natural Science Edition). Wasabi the New Foot-washing Lotion Development and the Sterilization Research. 6(1): 1-5
- 3) YunYoung, P. et al. 2006. Korean Journal of Horticultural Science & Technology. Sinigrin contents in different tissues of wasabi and antimicrobial activity of their water extracts. 24(4) 480-487