

Spanish Black Radish



DETOXIFICATION



Features of Spanish Black Radish:

- Induces the body's detoxification enzymes in cell and animal models*
- Supports healthy liver and gallbladder function
- Encourages healthy digestion
- Supports the body's normal toxin-elimination function
- Contains organically grown Spanish black radish*

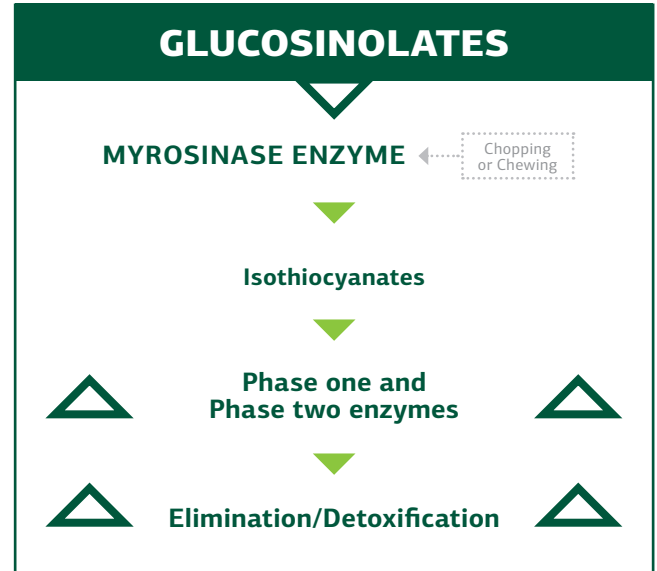
The Benefits of Glucosinolates

Radishes (*Raphanus sativus* L.) are a member of the cruciferous vegetable family that contains broccoli, cauliflower, cabbage and kale. Radishes are available in varieties that differ in terms of size, shape and color. Spanish Black Radishes (SBR) (*Raphanus sativus* L. var. *niger*) are particularly rich in a class of phytonutrients called glucosinolates, which have been associated with several beneficial health outcomes attributed to consumption of cruciferous vegetables.^{1,2}

The main mechanism of action through which metabolites of glucosinolates mediate their beneficial effects maybe via the induction of metabolic detoxification Phase I and II enzymes²⁻⁵ as well as induction of antioxidant enzymes.¹ The glucosinolates in SBR are unique in both content and concentration in comparison to other cruciferous vegetables.² For example, the glucosinolates in SBR make up over 4% in sprout of their total dry weight, whereas glucosinolates in more common crucifers, such as broccoli, only constitute 1% of the broccoli sprout.²⁻⁴ In contrast to more common crucifers, >65% of the glucosinolates present in SBR is glucoraphasatin.² The metabolite of glucoraphasatin, 4-methylthio-3-butenyl isothiocyanate (raphasatin), carries similar potency as sulforaphane (the metabolite of glucoraphanin that is particularly abundant in broccoli) on Phase II gene expression.^{2,4}

NOTES

FIGURE 1. Conversion of glucosinolates to the active isothiocyanates compounds



Myrosinase enzyme found in cruciferous vegetables or produced by intestinal bacteria converts glucosinolates to the active compounds (isothiocyanates). Raphasatin is an isothiocyanate derived from the glucosinolate glucoraphasatin found in Spanish Black Radish that activates phase one and two detoxification enzymes.

Supplement Facts

Serving Size: 1 Tablet
Servings per Container: 80 or 270

	Amount per Serving	%Daily Value
Vitamin C	5 mg	6%
Organic Spanish Black Radish	370 mg	†

†Daily Value not established.

Other Ingredients: Honey, organic acerola (berry), camu camu (berry), organic maltodextrin, manioc (root), and calcium stearate.

Available Sizes:

- Spanish Black Radish 80 Capsules
- Spanish Black Radish 270 Capsules

Please consult the actual product label for the most accurate product information

DOSAGE AM

PM

Metabolism of Toxins

Mice fed a diet containing 20% SBR for two weeks showed significant enhancement of the metabolism of toxins. Expression of Phase I and II detoxification enzymes was significantly greater for mice fed SBR than control diet.⁵

Liver Detoxification

An open-label pilot study demonstrated the efficacy of SBR in inducing Phase I and II enzymes in healthy male subjects (n=20). This study showed that consumption of SBR increased liver detoxification capacity in humans and positively altered the metabolism of acetaminophen.⁶ (See Figure 2)

Additional Product Support

- Livaplex®
- Garlic
- Cruciferous Complete™

FIGURE 2. Liver detoxification capacity with SBR supplement ⁶

AFTER 4 WEEKS	
PLASMA	URINE
↓ Glucuronide*	↑ Mercapturate*
↓ Sulfate	↑ Sulfate*
↓ Unchanged Acetaminophen*	↑ Unchanged Acetaminophen
↓ 17β-Estradiol*	
*p < 0.05 Dose: 6 tablets per day	

The data shows the effects of taking SBR supplement for four weeks on the detoxification of acetaminophen of the male subjects. The data shows a change (increase or decrease) from baseline (the beginning of the study) of the amount of acetaminophen metabolites and hormones in plasma and urine.

Acetaminophen metabolites: acetaminophen glucuronide, acetaminophen mercapturate, acetaminophen sulfate

Hormones: decrease in plasma estradiol and no change in testosterone levels.

REFERENCES

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3. Lewis, J., & Fenwick, G. (2003, October 02). Glucosinolate content of brassica vegetables: Analysis of twenty-four cultivars of calabrese (green sprouting broccoli, *Brassica oleracea* L. var. *botrytis* subvar. *cymosa* Lam.). Retrieved June 19, 2020, from <https://www.sciencedirect.com/science/article/abs/pii/S0308814687900124>
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80%

of the raw plant ingredients used in our products are grown on our organic and sustainable farm

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We harvest more than

6.5M

pounds of ingredients on our certified organic and sustainable farm

Healthy Soil. Healthy Plants. Healthy Lives.

Standard Process is a family-owned company dedicated to making high-quality and nutrient-dense therapeutic supplements for three generations.

We apply a holistic approach to how we farm, manufacture and protect the quality of our products. This comprehensive strategy ensures that our clinical solutions deliver complex nutrients as nature intended. It's how we define the whole food health advantage.