



# Garlieze™

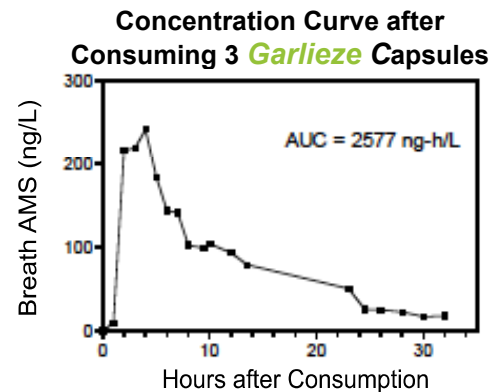
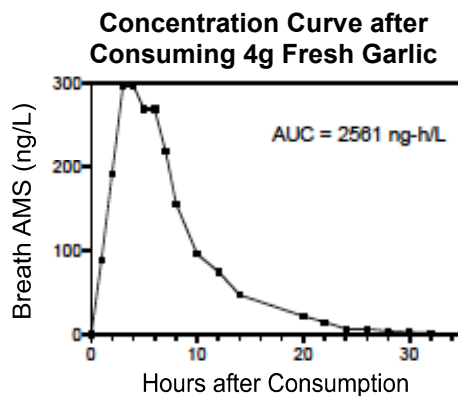
## Key Benefits:

- Allicin bioavailability equal to fresh garlic
- No expensive enteric coating needed
- Odor Controlled
- Standardized for key marker compounds
- Full spectrum of marker compounds & concentrations of:
  - Allicin
  - Alliin
  - Thiosulfinates
  - S-Allyl Gamma-Glutamyl-Cysteine Sulfur
- 25% faster tableting
- Kosher certified
- Patented process

**Garlieze™ High Allicin Buffered Garlic** from Nutra Products, Inc., is produced from an exclusive variety of premium grade garlic, *Allium sativum* L., specially grown for its nutraceutical marker content. This garlic is gently dehydrated to preserve key actives using a proprietary process that virtually eliminates garlic odor. Only the highest allicin is then specially selected and buffered. The result is a creamy white powder or granule with superior allicin potential, no garlic burp-back, virtually no flavor and very little odor – and this is achieved naturally, without irradiation or harsh chemical treatments. **Garlieze** allows allicin to form in the stomach by preserving alliinase – the enzyme needed to convert alliin to allicin. **Garlieze** makes expensive enteric coatings unnecessary and prevents allicin loss due to high pressure and heat caused by compression during tableting and by certain excipients that degrade alliinase.

## Garlieze: Equal to Fresh Garlic - The Standard for Efficacy

A recent clinical study demonstrated that the bioavailability of allicin in **Garlieze** is equal to fresh high allicin garlic macerate and yielded no stomach discomfort or unsocial responses. In this study, breath samples were analyzed for allyl methyl sulfide (AMS), the main allicin metabolite, using a sensitive sulfur-selective detector. The graphs show **Garlieze** yields allicin bioavailability equal to fresh garlic.



Study Conducted by Plant Bioactives Research Institute – April 21, 2006.

**Garlieze** is simply the best nutraceutical garlic available and is produced in accordance with current Good Manufacturing Practices. For the only garlic proven to be equal to fresh macerated garlic, ask for **Garlieze**.

Manufactured by:

NUTRA PRODUCTS, INC.



For more information, contact:

Nutra Products, Inc. - 866-447-0875 or  
The E.T. Horn Company - 800-442-4676

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**Garlieze efficacy is achieved utilizing a novel composition that combines a natural alkalizing matrix – Alkemy™ – with high alliin yielding garlic.**

Garlieze utilizes a natural alkalizing matrix to eliminate the acidic reaction when high potency garlic mixes with stomach acid. Historically, nutraceutical garlic tablets have been enteric coated because there was no way to prevent degradation of alliinase by stomach acid. Alliinase is irreversibly inactivated at pH  $\leq 3.0$  and the stomach typically has a pH of

2.0. Alliin cannot form without Alliinase. An enteric coating was needed so the tablet would pass through the stomach intact to allow for dissolution later in the more neutral environment of the intestine. The formation of alliin would then occur in the intestine by reaction of the alliinase with alliin.

When placed in an acid environment, Garlieze is extremely effective in repressing acid ions resulting in a higher or more neutral pH. The acid repression is rapid, achieving a pH of 4.0 or greater in the first 30 seconds which preserves the alliinase enzyme and prevents reaction with amino acids, proteins and sulfur compounds. The effect is ongoing and a pH in the range of 6.5 to 7.0 is achieved allowing the Garlieze to generate alliin in the stomach and pass through the stomach to the small intestine and release a high alliin yield after 120 minutes. This rapid buffering action results in no unpleasant garlic odors or stomach upset from non-enteric coated Garlieze, delivering 4000 to 7400 mcg/g per tablet.

**Garlieze Analysis for Alliin and pH vs Non-Buffered Garlic**

All samples assayed in duplicate at 1 gram per 200 ml, room temperature. Alliin is in mg/g pH 2.0 of the 0.015 M HCL acid solution before adding Garlieze

Tests	Agitation time (60rpm)	Garlieze A	Garlieze B	Non-Buffered Garlic
Alliin Yield in De-ionized Water	5 min	5.0, 4.7	8.7, 9.8	Not tested
	30 min	6.2, 5.9	10.3, 10.2	15.5, 15.6
pH after Agitation	30 min	8.8	8.3	6.5
Alliin Yield in Acid	30 min	9.5, 9.4	10.0, 10.2	1.3, 4.7
	120 min	9.4, 9.3	9.9, 10.1	1.3, 4.7
pH after Agitation	30 min	6.2, 6.2	5.6, 5.3	2.1, 2.1
	120 min	6.9, 7.0	5.9, 5.6	2.1, 2.1

Comments: A pH of greater than 7.0 in acid may not be beneficial to the formation of alliin in the Garlieze product. Optimum alliin yield is achieved after rapidly reaching a pH of 4.0 and maintaining a pH in the range of 5.5 to 6.8 in an acid environment. Alliin formation could decrease at pH levels greater than 7.0. Alliin formation is accomplished over time in tablets and granules. Sufficient time is needed in HPLC measurement for alliin and by products.

Garlieze non-enteric coated tablets have been tested against several leading brands of high alliin garlic tablets. The results of the buffering effectiveness over time have been measured and graphed below. Consumers report no burp-back or other discomfort from the non-enteric coated Garlieze product.

**Buffering Effectiveness Over Time**

Neutralization of 100g Solution of 0.017 M HCl (pH 2.0) by 500mg of Garlieze and Several Popular Garlic Brands

