



# THE THERAPEUTIC EFFECT OF AMINO ACIDS IN BREAST CANCER PATIENTS

A Case Series Study

Chowdhury Zaman, M.B.B.S., M.S.

Dr. Ken Lin, Ph.D Biochemistry

## ABSTRACT

### Background:

- Changes in plasma amino acid patterns reflect changes in protein metabolism that occur with different pathological conditions.
- Many cancer symptoms may be the repercussion of a disturbance/irregularity in protein.
- Breast cancer patients demonstrate imbalances in blood plasma amino acid composition.
- Over a seven-year period in a clinical setting, hundreds of cancer patients have been administered patient-specific orthomolecular supplementation.

### Objectives:

- Identify blood plasma amino acid patterns in breast cancer patients in comparison to standardized optimal norms.
- Administer a patient-specific orthomolecular therapeutic.
- Observe the symptomatic and biochemical impact of the intervention.

### Conclusions:

- Breast cancer symptoms correlate with disturbances in the host's protein metabolism.
- Normalization of imbalanced plasma amino acid profiles by the administration of patient-specific amino acid formulas can positively influence the clinical management of the cancer.

## Methodology:

- Blood plasma concentrations of 28 amino acids were profiled using HPLC in 91 Breast cancer patients.

## Study Participants (n=91):

- average of 6.5 years since diagnosis (range 1-15)
- average of 3.0 years on nutritional program (range 1-7)
- total blood assays performed = 309
- average assays/patient = 3.4
- 90% of subjects had undergone chemo, radio &/or surgery

**A. To standardize nutritional variables,** subjects daily self-administered:

1. multi-macronutrient, vitamin and minerals as well as a variety of nonessential nutrients, such as certain phytochemicals, antioxidants and enzymes.
2. a broad-based breast specific supplement containing various compounds including alpha lipoic acid, beta-ine, epigallocatechin (green tea extract), lycopene, and other enzymes and B, C and E vitamins
3. essential fatty acids

## B. Patient-specific supplementation:

- reflected individual circumstances compared to standard norms
- a daily total of 10 grams of protein as a general source of amino acids along with additional patient-specific supplementation of deficient amino acids, typically; taurine, histidine and occasionally leucine, lysine, thiamin.
- Therapeutic cycle was repeated for each subject while cancer and collateral medical symptoms were qualitatively and quantitatively monitored through multiple case studies.

## Chart A: Participant Age Distribution (n=91)

Age.....%	
35-50.....	27.5%
51-55.....	15.4%
56-60.....	15.4%
61-65.....	15.4%
66-70.....	14.3%
71-75.....	7.7%
76-81.....	4.4%
	100.0%

## Chart B: Participant Disease Stage

II .....	1%
III .....	44%
IV .....	55%

## Chart C: Amino Acid Composition of Protein Supplement

Aspartic Acid.....	10.8%
Threonine .....	7.3%
Serine .....	4.8%
Glutamic Acid .....	17.2%
Glycine .....	1.6%
Alanine .....	4.8%
Valine .....	5.7
Isoleucine .....	6.6%
Leucine .....	10.2%
Tyrosine .....	2.9%
Phenylalanine .....	2.8%
Histidine .....	1.9%
Lysine .....	8.0%
Arginine.....	2.0%
Proline .....	7.1%
Cysteine.....	2.5%
Methionine .....	2.0%
Tryptophan .....	1.7%

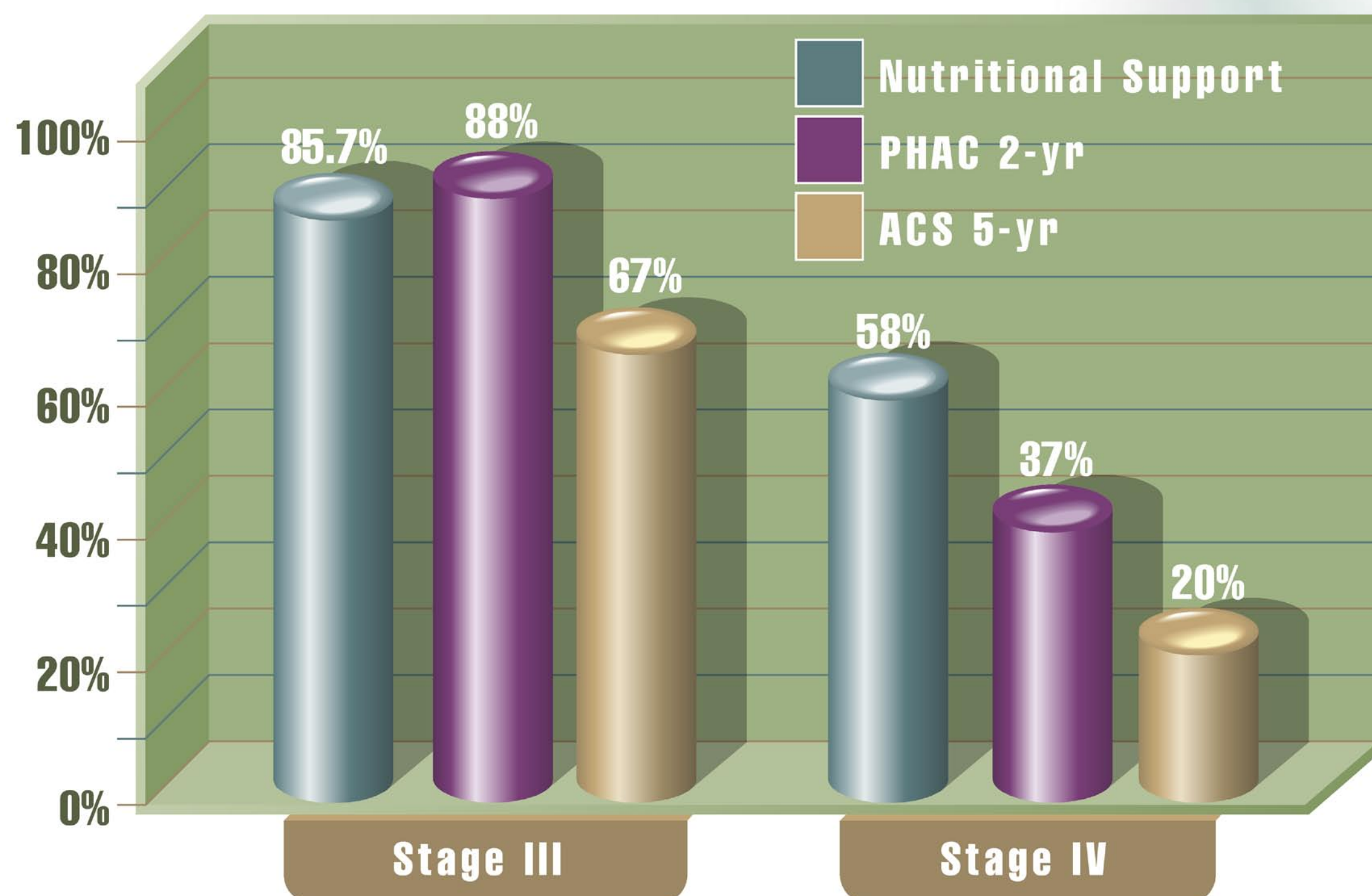
## Results:

Post-intervention, the following observations were made:

1. plasma amino acid profiles demonstrate correlative movement with intervention
2. subjects demonstrate significant positive response rates, stabilization, and improvement in quality of life without side effect or adverse events
3. there is beneficial management of collateral damage from radiotherapy and chemotherapy

**Chart D:**  
**Significant Starting/Ending**  
**Amino Acid Changes**  
**in Blood Plasma**  
 (maximum difference during assay period)

UNITS = NMOL/ML	STARTING	ENDING	DIFFERENCE
Taurine .....	91.7.....	111.9.....	20.2
Isoleucine .....	56.4.....	59.4.....	3.0
Leucine.....	112.7.....	130.7.....	18.0
Lysine.....	219.2.....	225.8.....	6.6
Arginine.....	82.3.....	93.0.....	10.7
Histidine.....	78.1.....	84.7.....	6.6
Glutamine.....	565.3.....	592.4.....	27.1
Alanine.....	396.9.....	419.7.....	22.8
Glycine.....	287.5.....	338.2.....	50.7
Valine.....	210.2.....	233.9.....	23.7



**Chart E:**  
**Survival: During the 7-year period**  
**patient survival appears to be ahead**  
**of that which might be typically**  
**anticipated.**

PHAC: Public Health Agency of Canada  
 ACS: American Cancer Society

- **Quality of Life:** In all surviving subjects (n = 63 = 69%), participants indicated overall improvement. Many indicated a reduction in the side effects of conventional treatment. Similarly, despite the loss of 31% of the subjects, many survived longer than had been anticipated by their doctors and reported enjoying a higher quality of life.

## STUDY LIMITATIONS

- (A) Supplementation was self-administered by the participants. Compliance, while encouraged could not be mandated.
- (B) There was no control of the environmental variables for each participant (i.e., eating habits, smoking, level of activity, etc).
- (C) It would be at least 10 to 15 years after the last patient was enrolled before a possible conclusion could be drawn regarding survival.
- (D) There is difficulty in quantitatively measuring endpoints such as remission, stabilization or immune response.
- (E) There will always be uncertainty surrounding how to assess the relative contribution of each nutritive product.
- (F) Amino acid adequacy is much better defined in growing and healthy organisms than during illness.

### Disclosure:

Dr. Eoghan O'Shea is the Medical Director and Dr Ken Lin is the Lab Director for Immune System Management Inc., the corporate entity that has sponsored this research.

### For further details contact:



Immune System Management Inc  
Suite 2, 99 Fifth Avenue, Ottawa ON  
613 237 4704  
oshea@aminomics.com