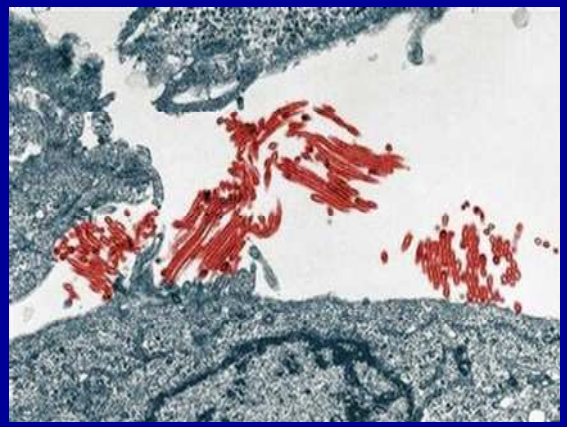
Roma 18 Settembre 2009
Campidoglio
Sala Giulio Cesare

SINDROME INFLUENZALE H1N1: UN APPROCCIO INTEGRATO PER IL POTENZIAMENTO DEL SISTEMA IMMUNITARIO CON VITAMINE AMINOACIDI E SALI MINERALI



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Enti Sanitari Istituzionali

SWINE FLU KEY SYMPTOMS

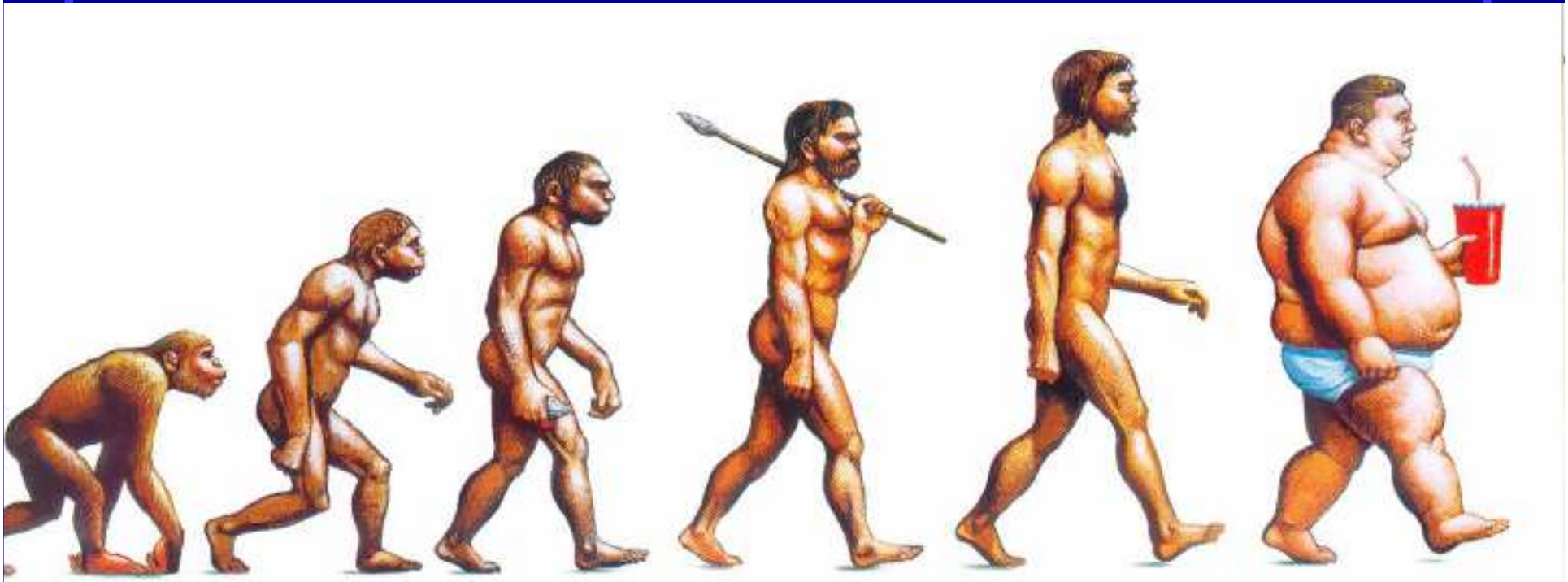
- **Sudden fever of greater than 100.4 degrees Farenheit (38℃)**
- **Cough**
- **Headache**
- **Aching Joints**
- **Nasal Congestion**
- **Chills**
- **General fatigue**
- **Diarrhea and/or vomiting**

- ***Diagnosis is made by sampling secretions from the inside of the nose and mouth during the first 24-72 hours of flu symptoms, or by testing blood samples for influenza virus presence.***

HOW TO PREVENT OR TREAT SUSPECTED SWINE FLU ?

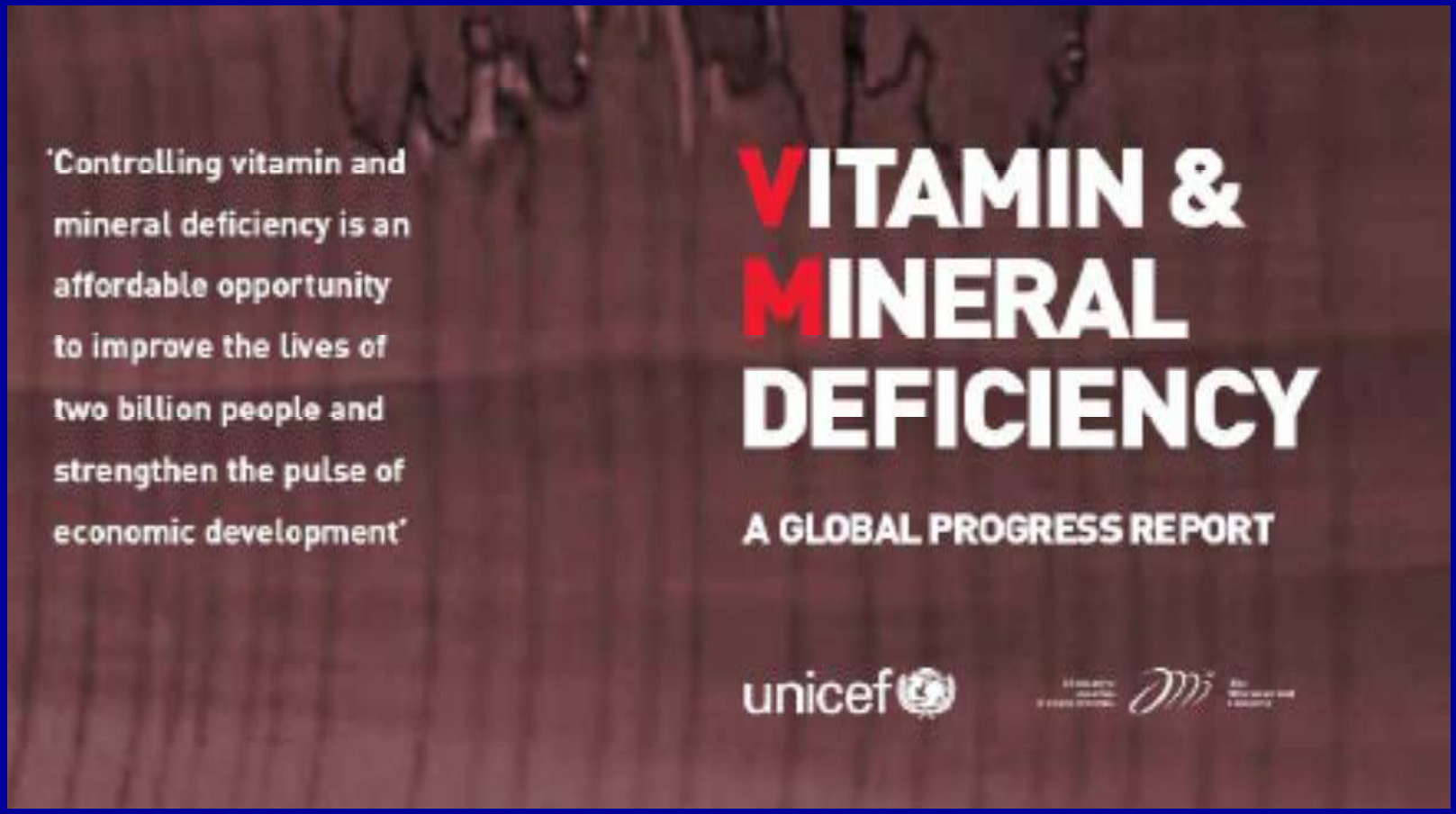
- Follow Your doctor prescription
- Use Vaccineprophylaxis
- Good health planning and safe vaccine campain has already started.
- Increase intake of daily Vitamin C,A,D,B12, Zinc,
- Avoid nutritinal mistakes
- Italy can face pandemia better than other countries because of good nutritionl attitude (Made in Italy!)

Nutrition through the ages



Overfeeding
1980s

OVERNOURISHED/MALNOURISHED ?



RELATIONSHIP BETWEEN NUTRITIONAL STATUS AND IMMUNE SYSTEM:A TOPIC FOR MUCH OF XX CENTURY

JN THE JOURNAL OF NUTRITION

Dramatic increases in our understanding of the organization of the immune system and the factors that regulate immune function have demonstrated a remarkable and close concordance between host nutritional status and immunity.

Thereis a cyclical relationship between poor nutrition, increased susceptibility to infectious diseases, leading to immunological dysfunction and metabolic responses that further alter nutritional status

Consequences of malnutrition

- © 2003 The American Society for Nutritional Sciences J. Nutr. 133:336S-340S, January 2003
- **Symposium: Nutrition and Infection, Prologue and Progress Since 1968**

  The History of Nutrition: Malnutrition, Infection and Immunity.
- **Gerald T. Keusch**
- *Fogarty International Center, National Institutes of Health, Bethesda, MD*

Consequences of malnutrition

- Increased morbidity and mortality
- Prolonged hospital stay
- Impaired tissue function and wound healing
- Defective muscle function, reduced respiratory and cardiac function
- Immuno-suppression, increased risk of infection
- CIPs lose around 2%/day muscle protein

MICRONUTRIENT MALNUTRITION, INFECTION AND IMMUNITY: AN OVERVIEW

Author: Bhaskaram P.

Nutrition Reviews, Vol 60, Suppl 1, 1 May 2002 , pp. 40-45(6) - Inter Life Sciences Institute

- **ABSTRACT:**
- **Micronutrient deficiencies and infectious diseases often coexist and exhibit complex interactions leading to the vicious cycle of malnutrition and infections among underprivileged populations of the developing countries, particularly in preschool children.**

- Several micronutrients such as:

  Vitamin C,A,D,B12, folic acid, riboflavin, iron, zinc, and selenium, have **immunomodulating functions** and thus i**nfluence** the **susceptibility** of a host **to infectious diseases** and the course and outcome of such diseases.
- Certain of these **micronutrients** also possess antioxidant functions that not only regulate immune homeostasis of the host, but also **alter the genome of the microbes, particularly in viruses**, resulting in grave consequences like resurgence of old infectious diseases or the emergence of new infections. *These micronutrient infection and immune function interactions and their clinical and public health relevance in developing countries* are briefly reviewed in this article.

H1N1 VIRUS REDUCED ENTERAL IMMUNE ACTIVITY

DECREASED:

- Peyer's patch leukotrienes + MAdCAM-1
- T & B cells in Peyer's patches, Lamina propria & epithelium
- Reduced secretory IgA and altered cytokines
- Mucosal atrophy
- Altered flora
- Decreased gastric acid
- Bacterial translocation

Probiotics

- Critical illness causes virulence of gut bacteria; treatment worsens gut function
- Probiotics inhibit growth of pathogenic enteric bacteria
- block epithelial invasion by pathogens
- eliminate pathogenic toxins
- improve mucosal barrier function
- enhance T-cell and macrophage function
- reduce production of TNF and NFkB

THE IMMUNE SYSTEM

A complex and interactive biological system that coordinates the detection, destruction and elimination of any foreign material or organism entering the body.

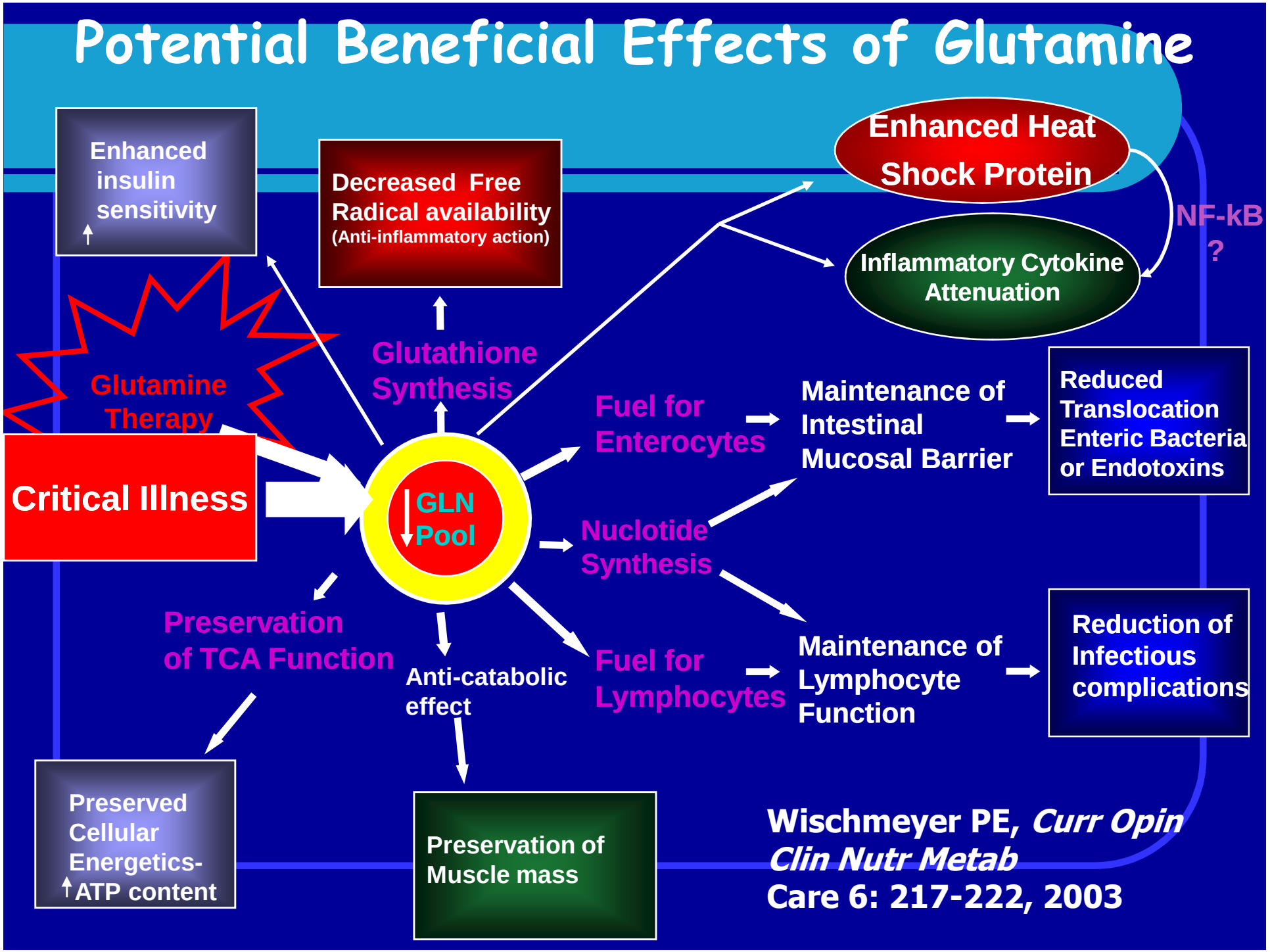
- Oxidants: cytokines, NFkB, genes, inflam^{n}
- Nutrients: Vit C,A,D,B12,Zn,Se,Glu,Arg, FFAs, Protein, etc.
- Glutathione: oxidant defence
- Anti-inflammatory molecules: attenuation

DISEASE MODULATING NUTRIENTS:
Arrows for Immuno/Pharmaconutrition

- ***Attenuate metabolic response***
- ***Prevent oxidant stress***
- ***Favourably modulate immune response***
- ***Probiotics*** **to alter gut environment**
- ***Glycaemic control:*** **keep blood glucose <8mmol/l: reduces infections and organ failures**

Glutamine

- Non-essential amino acid – ‘conditionally essential’ in sepsis/major trauma
- Vital to gut, immune cells, and kidney
- Serves as metabolic fuel; precursor to DNA synthesis
- BUT Levels drop after injury, exercise and stress. Very low in critical illness first 72 hours
- Glutamine deficiency at onset of critical illness/sepsis correlated with increased mortality


Potential Beneficial Effects of Glutamine
Enhanced insulin sensitivity
Decreased Free Radical availability (Anti-inflammatory action)
Enhanced Heat Shock Protein
NF-kB ?
Inflammatory Cytokine Attenuation
Glutathione Synthesis
Glutamine Therapy
Critical Illness
GLN Pool
Fuel for Enterocytes
Maintenance of Intestinal Mucosal Barrier
Reduced Translocation Enteric Bacteria or Endotoxins
Nuclotide Synthesis
Preservation of TCA Function
Anti-catabolic effect
Fuel for Lymphocytes
Maintenance of Lymphocyte Function
Reduction of Infectious complications
Preserved Cellular Energetics- ATP content
Preservation of Muscle mass
Wischmeyer PE, Curr Opin Clin Nutr Metab Care 6: 217-222, 2003

L.ARGININE

- ‘Conditionally essential’ amino acid derived from glutamine and citrulline
- For protein synthesis, cell division, NO, urea cycle, creatine phosphate (ATP)
- Stimulates hormone release and immune system
- Deficiency: Immune suppression, ↓TH2 cell function, free radical formation, increased susceptibility to virus H1N1
- Abnormal microperfusion
- Abnormal wound healing

PUFAs

- Arachidonic Acid:
- COX and LOX precursor: Omega-6
- γ-Linoleic acid (GLA) – borage oil
- Fish oils: Eicosapentanoic acid (EPA) and Docosahexanoic acid (DHA): Omega-3 FAs

LIPIDS AS BIOEFFECTORS IN THE IMMUNE SYSTEM

Guy A. Cabral,
Dept of Microbiology and Immunology, Virginia Commonwealth University,
School of Medicine, 1101 E. Marshall Street, Richmond, USA

Ratios in paleolithic diet ω-6:ω-3
1. Current Western diet 16.7:1

- Current UK PN Soybean oil base 7:1 (LCT)
- Membrane composition depends on diet
- AA arises from GLA
- AA, DHA and EPA are present in inflammatory cell membrane phospholipids
- Hydrolysis of FAs by phospholipase to mediators

- Lipids, in addition to serving as fuel stores and structural components of cell membranes, act as effectors and second messengers in a variety of biological processes including those associated with the immune system and linked to homeostasis, immune responsiveness, and inflammation.

THE HIGHER YOUR VIT D LEVEL, THE LOWER YOUR RISK OF CONTRACTING FLU AND OTHER RESPIRATORY TRACT INFECTIONS

- Canada's decision to investigate the role of vitamin D in protection against the swine flu.
- *Vit D levels play a significant role in your likelihood of getting the flu.*
- Vit D has been a hot research topic these past few years, and has been shown to have remarkable impact on nearly every single disease studied.
- Here is a list of four studies published this year, showing an inverse association between respiratory tract infections and 25(OH)D levels.

- **A 2007 study suggests higher vit D status enhances immunity to microbial infections. Subjects with vitamin D deficiency had significantly more days of absence from work due to respiratory infection than did control subjects.**
- **A 2009 study on vit D deficiency in newborns with *Acute Lower Respiratory Infection (ALRI)* confirmed a strong, positive correlation between newborns' and mother's vitamin D levels. Over 87 percent of all newborns and over 67 percent of all mothers had vitamin D levels lower than 20 ng/ml, which is a severe deficiency state.**

  Newborns with vit D deficiency appear to have an increased risk of developing ALRI, and since the child's vitamin D level strongly correlates with its mother's, the researchers recommend that all mothers' optimize their vitamin D levels during pregnancy, especially in the winter months, to safeguard their baby's health.
- **A 2009 analysis of the Third National Health and Nutrition Examination Survey examined the association between vit D levels and recent *Upper Respiratory Tract Infection (URTI)* in nearly 19,000 subjects over the age of 12.**

An association of serum vitamin D concentrations < 40 nmol/L with acute respiratory tract infection in young Finnish men.

Laaksi I, Ruohola JP, Tuohimaa P, Auvinen A, Haataja R, Pihlajamäki H, Ylikomi T

- **1: Am J Clin Nutr. 2007 Sep;86(3):714-7.**
  - Department of Cell Biology and Anatomy, Medical School, University of Tampere, Tampere, Finland.
  - Differences in the ability of human populations to produce vitamin D may contribute to susceptibility to infection. OBJECTIVE: We aimed to explore whether an association exists between vitamin D insufficiency and acute respiratory tract infection in young Finnish men.

2: Infect Immun. 2008 Sep;76(9):3837-43. Epub 2008 May 27.

- Vitamin D signaling, infectious diseases, and regulation of innate immunity.
- White JH.Department of Physiology and Medicine, McGill University, Montreal, Quebec, Canada.

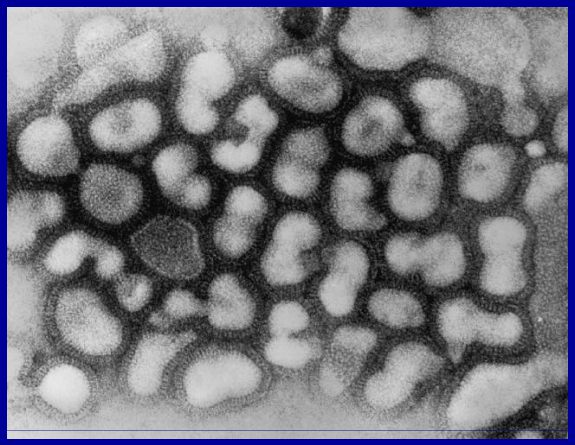
ASSOCIATION BETWEEN SERUM 25-HYDROXYVIT D LEVEL AND UPPER RESPIRATORY TRACT INFECTION

(3rd National Health and Nutrition Examination Survey)

1: Arch Intern Med. 2009 Feb 23;169(4):384-90.

Ginde AA, Mansbach JM, Camargo CA Jr

Emergency Medicine Network,
Massachusetts General Hospital,
326 Cambridge Street - Boston, USA.



- Disease is usually most severe in very young children (under 5 yrs) and elderly.
- Young children often lack antibodies to the influenza virus because of no prior exposure; small diameter of components of the respiratory tract means that inflammation and swelling can lead to blockage of parts of respiratory tract, sinus system or Eustachian tubes.
- Although children with risk factors for influenza complications have a higher case fatality rate, the majority of pediatric deaths occur among children with no high-risk conditions. In the elderly, influenza is often severe because of an underlying decreased effectiveness of the immune system and/or chronic obstructive pulmonary disease or chronic cardiac disease.

THE VIT D CONNECTION TO PEDIATRIC INFECTIONS AND IMMUNE FUNCTION.

Walker VP, Modlin RL. (selected bibliography)

- 1: Pediatr Res. 2009 Jan 28. Dept of Ped, Dpt of Microbiology, Dpt of Medicine, Geffen School of Medicine at UCLA Los Angeles, CA 90095.
  - **Over the past 20 yrs a resurgence in vit D deficiency and nutritional rickets has been reported throughout the world, including the US.**
  - **Inadequate serum vit D concentrations have also been associated with complications from other health problems, including tuberculosis, cancer (prostate, breast and colon), multiple sclerosis and diabetes.**
  - ***Vit D possess important pleiotropic actions* outside of Ca homeostasis and bone metabolism.**
  - **In children, has been recognized and demonstrate the *link between vit D deficiency and the increased incidence of respiratory infections*.**
  - **Contribution of vit D in the host defense response to infection.**

  - ***This knowledge is particularly relevant and timely, because infants and children appear more susceptible to viral rather than bacterial infections in the face of vit D deficiency. The connection between vit D, infections and immune function in pediatric population indicates a possible role for vit D supplementation in potential interventions and adjuvant therapies.***

ZINC AND SELENIUM AS MOLECULAR TRIGGERS OF IMMUNE SYSTEM:

Role of immune host defence at Molecular Biology(MB) levels is huge and not summarizable here. The insights began to emerge when immunologists with an interest in nutrition adopted and adapted the emerging tools of MB

A case in point involving Zn is

-***Pamela Fraker's*** laboratory in the late 1990 s. suggested the effects on lymphocyte glucocorticoid receptors from zinc restriction in Laboratory rodents as a mechanism for immunosuppression.

-***Melinda Beck*** showed in a mouse model that pulmonary damage due to an influenza virus is greater in a Se deficient animal.

At molecular/cellular basis, the lack of oxidative protection led to an increased oxidative response, which directly spurred on the local inflammation.

BIOBLIOGRAPHY

Baum MK, Shor-Posner G, Campa A. Zinc status in human immunodeficiency virus infection. J Nutr 2000 May;130(5S Suppl):1421S-3S

Bogden JD, et al

Castillo-Duran C; et al. Controlled trial of zinc supplementation during recovery from malnutrition: effects on growth and immune function. Am. J. Clin. Nutr. 1987;45: 602-608.

Chandra RK; Trace element regulation of immunity and infection. J. Am. Coll. Nutr. 1985;4: 5-16.

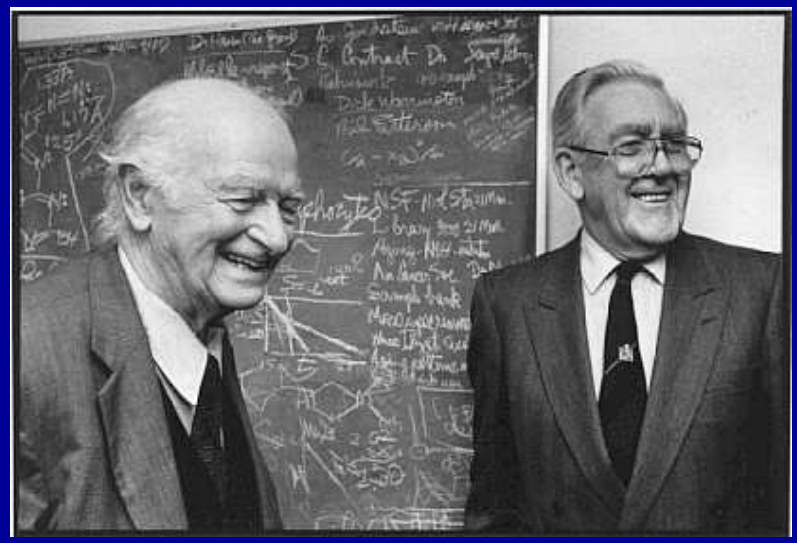
VIRUS FIGHTING PROWESS OF VIT C BY NOBEL AWARD LINUS PAULING SINCE 1954.

…IT CAN HELP SHORTEN DURATION OF COMMON VIRUSES

VIT C,A,D,B12,Zn,Se RAISE HOST DEFENCE …

”VIRUS IS NOTHING IF THE HOST IS STRONG”

(Claude Bernard Statement with Louis Pasteur approval)



L'UOMO HA PERSO X UNA MUTAZIONE GENETICA LA CAPACITA' DI ESPLETARE L'ULTIMA FASE DELLA SINTESI DI AC ASCORBICO

(ox Ac. Gluconolattonici mediante la L.Gluconolattone-Ossidasi)

A causa di questa perdita enzimatica, l'acido ascorbico è diventato "vitamina" essenziale, il cui apporto deve provenire necessariamente dall'esterno, ovvero tramite l'alimentazione.

- Già poco dopo l'isolamento della Vit C è stato riconosciuto che l'acido ascorbico rappresenta un sistema chimico redox che facilmente ed in modo reversibile, con l'emissione di idrogeno, può essere ossidato in acido Deidro L- ascorbico.
- La possibilità di diventare attivo donatore di idrogeno durante idrossidazioni enzimatiche, causa una quantità di processi enzimatici del metabolismo intermedio, la sintesi noradrenalinica, adrenalinica o dei corticosteroidi, la scomposizione di colesterina, la sintesi del collagene ecc.
- Inoltre l'Acido Ascorbico facilita maturazione degli GR e partecipa all'assorbimento e distribuzione del Fe.
- Vit C ha un'influenza positiva sulla metabolizzazione di farmaci ed altre sostanze non organiche nei microsomi delle cellule epatiche.
- La Vit C 'immunomodula, grazie all'ac ascorbico, consentendo un sensibile aumento dei meccanismi di difesa mediante stimolazione della fagocitosi leucocitaria e della sintesi fisiologica di interferone.

FUNZIONI DELLA VITAMINA C

- **Stimolazione leucocitaria**
- **Stimolazione della sintesi delle immunoglobuline**
- **Stimolazione del sistema del complemento**
- **Stimolazione della sintesi di interferoni**
- **Stimolazione della sintesi delle prostaglandine**
- **Annullamento di sostanze cancerogene e tossiche**
- **Captazione dei radicali liberi**
- **Composizione di collagene**
- **Riduzione del colesterolo LDL nel sangue**
- **Aumento del contenuto di colesterolo HDL nel sangue**
- **Riduzione dei trigliceridi nel sangue**
- **Stimolazione della attività corticosurrenalica.**
- **Scomposizione ed eliminazione di istamina.**
- **Sintesi della Carnitina**

LACKING IMMUNE SUPPORTS IS LIKE GOING INTO BATTLE WITH A NEON TARGET ON YOUR FOREHEAD…

SWINE FLU PREVENTION STARTS FROM THE NASAL MUCOSA: VIT C/SALINE DROPS

Dripping saltwater + vitamin c properly diluted into the nose can remove virus/bacteria particles, while reducing congestion and activating local immunity.

Try over-the-counter saline drops, or make your own by mixing 50 cc of warm water with ¼ tsp salt + ¼ tsp baking soda + ¼ tsp of ascorbic acid.

Use a bulb syringe to squirt the mixture into one nostril while holding the other one closed and then do the other side.

Repeat the full cycle every 6-8 hrs

DON'T PANIC

- WE DON'T NEED TO CLOSE THE SCHOOLS
- OR TO WEAR FACIAL MASKS…

ALARMISM IS ABSOLUTELY UNNECESSARY…

- UNLESS YOU'LL SEE THIS PICTURE IN THE NEXT FOOTBALL MATCH ON TV.(just kidding)

- **PLEASE TAKE YOUR DAILY SUPPLEMENTS**!

THANKS FOR LISTENINGS…

THE END