

# ESPEN Congress Glasgow 2002

**A Patient's Journey through Complicated Pancreatitis**

**Acute Pancreatitis**

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# A patient's journey through complicated pancreatitis

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**Glutamine - omega-3 fatty acids -selenium**

# acute pancreatitis

## additional therapy

### immunonutrition

#### glutamine

- protection of small intestine mucosal barrier
- protection of kidney
- improvement of immune system

*optimal  
immune cell function*

#### omega-3 fatty acids

- immunomodulation
- anti-inflammatory properties

### antioxidants

#### selenium

- regulation of transcription factors in mononuclear blood cells (NF-kappa B) inflammatory response
- antioxidative properties
- selenoenzymes



# acute pancreatitis

## Glutamine

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- kidney
- immune systeme
- small intestine mucosal barrier

- muscle

„glutamine consumption“

„glutamine depot“

increased requirement of glutamine

**glutamine supplementation**

# acute pancreatitis

## Glutamine

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### effects of glutamine supplementation

- **improvement of:**
  - N-balance
  - mucosal barrier of small intestine
- **reduction of:**
  - nosocomial infections

# acute pancreatitis

**Omega-3-fatty acids**



**immunonutrition**



**antiinflammatory properties**



**improvement of immunological parameters**

# acute pancreatitis

„free radical disease“

Insufficiency of antioxidative defence mechanism  
(glutathionperoxidases, SOD, selenium deficiency)  
no specific antiinflammatory therapy existent

## antioxidative therapy with sodium selenite

inflammatory  
products on  
molecular level  
in mononuclear  
blood cells

**NF- $\kappa$ B**

immunocompe-  
tent cells

T-helper cells  
B-Lymphocytes

antioxidative  
enzymes

selenoenzymes!

antioxidative  
properties

(> ubiquinone,  
e-vitamine,  
c-vitamine)



# Importance of selenium administration in cases of acute pancreatitis

- redoxsensitive transcription factor *NF-κB* is essential for amplification and down regulation of pro- and anti-inflammatory cytokines
- modulation of inflammatory response by influencing the *NF-κB* binding activity via *selenoenzymes* (PH-Gpx + TRR) → restoration of the redox balance?
- *immunomodulation* (CD4+ cells, B-Lymphocytes)
- *antioxidative properties* (scavenger of peroxynitrite)



# Selenium in the therapy of acute pancreatitis

- Lab-Parameters:
- low selenium cc. in whole blood and plasma
  - low Gpx-activity in whole blood
  - high cc. of ROS in whole blood

- Therapy 1<sup>st</sup> day: 105 µg sodium selenite (Addel N<sup>®</sup>)  
+ 1000 µg sodium selenite as bolus  
+ 1000 µg sodium selenite continuously
- 2<sup>nd</sup> day: 1000 µg sodium selenite i.v./ 24 h  
→ until 14th day - later 200 µg/d as bolus

## biochemical parameters

- selenium in plasma and whole blood (day 2,3) ↑
- Gpx-activity in whole blood (day 3) ↑
- MDA cc. in plasma (day 4,5) ↓



# acute pancreatitis

## review

### antioxidants

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