

Scientific information on

# Vascular surgery

## Causes of ischaemia:

- Arteriosclerosis (acute and chronic occlusions)
- Vascular injury
- Compartment syndrome after accidents

- ➔ Reduction of micro-circulation
- ➔ Increase of inflammatory parameters
- ➔ Release of NO

## Risks after reperfusion:

- Increased formation of ROS:
  - Inactivation of NO ( $\text{NO} + \text{O}_2^- \rightarrow \text{Peroxynitrite}$ )
  - Worsening of arteriosclerosis (ox. LDL, leukocyte and monocyte sticking [formation of foam cells])
  - Compartment syndrome: rhabdomyolysis, muscle necrosis, amputation

## Conventional measures to prevent reperfusion injury:

- Increasing NO concentration with L-arginine supplementation [Wilson et al. Circulation 2007; 116: 188-195]
- Reduction of ROS production: Allopurinol, SOD, DHEA

➔ ineffective

## Data on selenium (selenite):

Patients with aortic aneurysm and PAOD [Albrecht et al. Biomed. Chromatogr.1999; 13: 131-134]

- Reduction of ROS Production
- Increase in NO concentration

## Possible actions of selenite supplementation:

- Direct inhibition of ROS and peroxynitrite formation
- Shifting the balance of ROS/NO in favour of NO
- Preventing the formation of atherogenic substances (ox. LDL, leukocyte and monocyte sticking [formation of foam cells])

## Suggested timing and dosage for selenium supplementation:

**Important:** reperfusion is a two-phase process!

Early phase: immediately after declamping; Late phase: post-operative days 1 to 7

Time point	Dosage
Pre-operative bolus (Boosting of selenium stores)	500 µg - 1000 µg Se* as selenase® solution for injection
Continuous infusion intra-operatively (immediately after declamping)	500 µg - 1000 µg Se*/24h as selenase® solution for injection
Continuous infusion post-operatively (at least until post-op day 7)	500 µg - 1000 µg Se*/d as selenase® solution for injection
Daily maintenance dose (for at least 3 months, followed by test of selenium levels)	dosage adjustment according to reference value (test of selenium levels)

\* ideally dosage adjustment is carried out after bedside tests of ROS and NO

# selenase®

a chance for your intensive care patients



## selenase® –

- protects from endothelial, organ and reperfusion damage
- modulates inflammatory and coagulation pathways
- is very well tolerated



## Why wait?

### Abbreviated Prescribing Information

**selenase® 100 micrograms, solution for injection (50 micrograms/ml)**

**selenase® 500 micrograms, solution for injection (50 micrograms/ml)**

Active ingredient: sodium selenite pentahydrate. **Composition:** Each 2 ml ampoule/10 ml injection vial contains 100 micrograms/500 micrograms selenium as 333 micrograms/1.66mg sodium selenite pentahydrate ( $\text{Na}_2\text{SeO}_3 \cdot 5\text{H}_2\text{O}$ ), corresponding to 50 micrograms/ml. **Excipients:** Sodium chloride, hydrochloric acid, Water for Injections. **Indication:** Proven selenium deficiency that cannot be offset from food sources. **Posology and Administration:** selenase® solution for injection is administered as an intramuscular or intravenous injection at a daily dose of 100 – 200 µg (1.27 – 2.53 µmol) selenium. If necessary, this dose can be increased to 500 µg (6.33 µmol) for a typical adult. No dosage adjustment is required for paediatric, renal or hepatic impairment patients. **Contraindications:** Selenosis. **Interactions:** Ensure that the pH value does not fall below 7.0 and that the solution is not mixed with reducing substances (e.g. vitamin C). **Pregnancy and Lactation:** There are no data from the use of selenase® in pregnant or lactating women. **Undesirable Effects:** None known to date when used as directed. **Overdose:** Counter measures include gastric lavage, forced diuresis, dialysis or administration of high doses of vitamin C. **Pharmaceutical Precautions:** Store below 25°C. **Legal Category:** POM. **Presentation:** Cartons containing 10 x 2ml ampoules / 10 x 10ml glass vials for single use. **MA Numbers:** PL 20437/0003, PL 20437/0004. **MA Holder:** biosyn Arzneimittel GmbH, Schorndorfer Str 32, D-70734 Fellbach, Germany. **Date of Preparation:** November 2004

selenase® corrects selenium deficiency



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We would be pleased to send you any further information.