

## Efficacy of a Disease-Specific Nutritional Support for Pressure Ulcer Healing: A Systemic Review and Meta-Analysis

Cereda E, Neyens JCL, Caccialanza R, Rondanelli M & Schols JMGA.  
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### Objective:

To meta-analyze results on the efficacy of using high-calorie, high protein nutritional formula (oral or enteral) enriched with arginine, zinc and antioxidants in patients with pressure ulcers.

### Methods:

Meta-analysis included three multi-center randomized controlled trials of elderly long-term care and home care patients (n=273) comparing specialized and control nutritional support in moderate to severe pressure injury (Stages 2, 3 & 4). The primary outcome of interest was the percentage change in pressure ulcer area at 8 weeks. Secondary outcomes included reduction in wound area of ≥40% and complete healing at 8 weeks, and percentage change in area at 4 weeks.

Study <sup>1-3</sup>	Size (n)	Malnutrition	Duration (wks.)	Intervention	Control	Incremental Specialized Nutrient Differences
Cereda, 2015	200	100%	8	Specialized ONS (2) + regular diet	Standard ONS (2-IC/IN*) + regular diet	6 g L-arginine 8 mcg Zinc 1.2 mg Copper 400 mg Vitamin C 60 mg Vitamin E 80 mcg Selenium 2.4 mg Manganese (per day)
van Anholt, 2010	43	0%	12	Specialized ONS (3) + regular diet	Placebo ONS (3) + regular diet	9 g L-arginine 12 mcg Zinc 1.8 mg Copper 600 mg Vitamin C 90 mg Vitamin E 120 mcg Selenium 3.6 mg Manganese (per day)
Cereda, 2009	28**	90%	12	Specialized ONS (2) + regular diet – or – 1000 mL Specialized TF (+/- Standard TF)	Standard ONS + regular diet – or – Standard or Standard High Protein TF	8.5 g L-arginine 8 mcg Zinc 200 mcg Copper 250 mg Vitamin C 60 mg Vitamin E 40 mcg Selenium 0.5 mg Manganese (per liter)

\*IC/IN = Isocaloric, isonitrogenous \*\*10 oral, 18 tube feeding (TF)

Adapted from Table 1

### Results:

Compared with controls, providing additional amounts of L-arginine, zinc and other antioxidants (Cu, vitamins C & E, Se, Mn) as part of a specialized energy dense and protein rich ONS or TF (1.25 kcal/mL; 20% protein) was found to:

- Reduce pressure ulcer area to a greater extent (-15.7% [95%CI, -29.9, -1.5]; p=0.03)
- Reduce pressure ulcer size by ≥40% in more participants at 8 weeks (OR=1.72 [95%CI, 1.04, 2.84]; p=0.033)

### Conclusion:

- Specialized ONS and enteral formulas used for at least 8 weeks are associated with better healing of Stage 2, 3 & 4 pressure injuries than standard interventions.

Summary prepared by Nestlé Health Science.

The complete study can be accessed online at: <https://pubmed.ncbi.nlm.nih.gov/28537329/>

1. Cereda E et al. *Ann Intern Med* 2015;162: 167-174.  
 2. van Anholt RD et al. *Nutr* 2010; 26: 867-872.  
 3. Cereda E et al. *J Am Geriatr Soc* 2009; 57: 1395-1402.

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