CUBITAN EVIDENCE BOOKLET

AN OVERVIEW OF CUBITAN'S CLINICAL EVIDENCE IN THE DIETARY MANAGEMENT OF WOUNDS

NUTRICIA Cubitan®

This information is intended for healthcare professionals only.

Cubitan is a Food for Special Medical Purposes for the dietary management of chronic wounds and must be used under medical supervision.

Contents

INTRODUCTION

Chronic wounds are a major public health issue placing a growing burden on patients and healthcare systems across the world[1] and are expected to continue to increase in prevalence as our population ages[2]. Chronic wounds have a significant negative impact on patient quality of life causing pain, discomfort, sleep disturbances, depression and reduced social interaction[2, 3]. It is estimated that 25 – 50% of patients in acute hospitals have a wound with 55 – 60% of these chronic in nature[2, 4]. It is also estimated that over 23% of all hospital in-patients have a pressure ulcer. In the community setting, chronic wound prevalence in Ireland has been estimated at 4%[2, 5] and approximately 68% of community nursing time is spent on wound care[6-8]. This high prevalence also has a substantial economic burden. The total cost to the health service of wound care in Ireland is estimated at €789 million per year, with cost per patient ranging from €2,680 to €5,075[1].

Good nutritional status is essential for management of pressure ulcers and is generally accepted as an essential part of care rather than a specific factor influencing outcomes[2]. The importance of the role of nutrition in wound healing is recognised in national and international guidelines and specific nutritional recommendations have been developed for energy, protein, fluid and micronutrient intake[2, 9, 10] National and international guidelines recommend providing high-protein, arginine, zinc and antioxidants oral nutritional supplements (ONS) or enteral formula for adults with a Category/Stage II or greater pressure injury who are malnourished or at risk of malnutrition[9, 10] with supplementation for at least 8 weeks recommended[2, 9].

The importance of micronutrients[11, 12]:

Arginine is a conditionally essential amino acid[13]. It is a precursor of nitric oxide acts as an antioxidant. It stimulates vasodilation, enhances collagen synthesis and stimulates the secretion of important wound healing factors[14]. There is on-going evidence that is significantly improves the rate of healing in pressure ulcers when used as part of a nutrient enriched formula[13, 15-17].

Zinc is a mineral which catalyses over 100 enzymes including metalloproteinases (involved in remodelling the connective tissues). It plays a key role in protein synthesis, tissue growth and healing. Zinc deficiency is associated with delayed wound healing, reduced skin cell production and reduced immune system function[13].

Vitamin C plays an essential role in the synthesis of collagen in the connective tissue. It is a potent antioxidant and is important for proliferation of fibroblasts and the cytotoxic activity of leukocytes. Vitamin C deficiency results in an impaired immune response and increases the risk of wound dehiscence[2].

Vitamin E. The primary function of this substance in wound healing is as an antioxidant.

Vitamin A has an anti-inflammatory effect in wounds. Deficiency of vitamin A results in impaired collagen synthesis and reduced immune function.

Iron is a cofactor in hydroxylation of lysine and proline for collagen synthesis. It is required for oxygen transport, and it is a component of many enzymes required for wound healing. Low haemoglobin concentration due to iron deficiency may be a factor in tissue hypoxia, impaired hydroxylation of collagen and reduced immune response[9].

TREATMENT STUDIES

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TREATMENT STUDIES

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Cereda E., Klersy C., Serioli M., Crespi A., D'Andrea F. for OEST Study Group.

A Nutritional Formula Enriched with Arginine, Zinc and Antioxidants for the Healing of Pressure Ulcers: A Randomized, Controlled Trial.

The Oligoelement Sore Trial (OEST).
Annals of Internal Medicine, 2015; 162:167-174.

Background: Trials on specific nutritional supplements for the treatment of pressure ulcers (PUs) have been small, inconsistent in their formulations, or unsuccessful in controlling for total supplement calorie or protein content.

Objective: To evaluate whether supplementation with arginine, zinc, and antioxidants within a high-calorie, high-protein formula improves PU healing.

Design: Multicenter, randomized, controlled, blinded trial.

Setting: Long-term care and home care services.

Patients: 200 adult malnourished patients with stage II, III, and IV PUs.

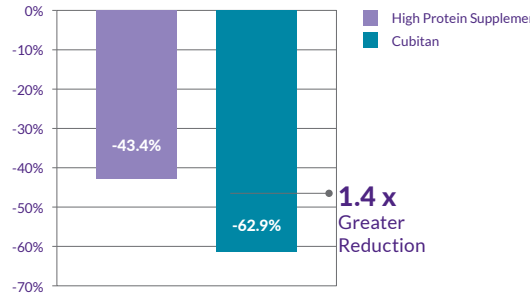
Interventions: An energy-dense, protein-rich oral formula enriched with arginine, zinc, and antioxidants (400 mL/d) or an equal volume of an isocaloric, isonitrogenous formula for 8 weeks.

Measurements: The primary end point was the percentage of change in PU area at 8 weeks. Secondary end points included complete healing, reduction in the PU area of 40% or greater, incidence of wound infections, the total number of dressings at 8 weeks, and the percentage of change in area at 4 weeks

Results: Supplementation with the enriched formula (n=101) resulted in greater reduction in PU area (mean reduction 60.9% [95% CI, 54.3% - 67.5%]) than with the control formula (n=99) (45.2% [CI, 38.4% - 52.0%]) (adjusted mean difference, 18.7% [CI, 5.7% - 31.8%]; P=0.017). A more frequent reduction in area of 40% or greater at 8 weeks was also seen (odd ratio, 1.98 [CI, 1.12 - 3.48]; p=0.0180. No difference was found in terms of the other secondary end points. Secondary analysis which included patients who remained in the study for at least six weeks showed a similar treatment effect (mean reduction 62.9% [95% CI 56.3 - 69.4] vs 43.4% [95% CI, 35.9 to 50.9]) (adjusted mean difference 17.1% [CI, 8.2% to 26.5%]; P = 0.005).

Conclusion: Among malnourished patients with PU, 8 weeks of supplementation with an oral energy-dense formula enriched with arginine, zinc and antioxidants improved pressure ulcer healing.

Treatment with Cubitan® for 8 weeks was found to be cost-effective and required a lower number of dressings p = 0.005. Mean difference (95% CI) between the experimental and control formula groups.



Van Anholt R.D., Sobotka L, Meijer E.P., Heyman H., Groen H.W., Topinková E., van Leen M., Schols J.M.G.A.

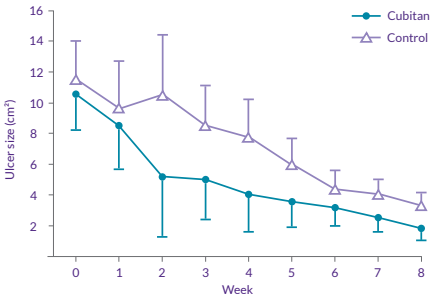
Specific nutritional support accelerates pressure ulcer healing and reduces wound care intensity in non-malnourished patients.

Nutrition, 2010. 26(9): p. 872-72.

Objective: An investigation into the potential of a high-protein, arginine- and micronutrient-enriched oral nutritional supplement (ONS) to improve healing of pressure ulcers in non-malnourished patients who would usually not be considered for extra nutritional support.

Methods: Forty-three non-malnourished subjects with Stage III or IV pressure ulcers were included in a multicountry, randomized, controlled, double-blind, parallel group trial. They were offered 200mL of the specific ONS or a non-caloric control product three times per day, in addition to their regular diet and standard wound care, for a maximum of 8 wk. Results were compared with repeated-measures mixed models (RMMM), analysis of variance, or Fisher's exact tests for categorical parameters.

Results: Supplementation with the specific ONS accelerated pressure ulcer healing, indicated by a significantly different decrease in ulcer size compared with the control, over the period of 8 wk (P≤ 0.016, RMMM). The decrease in severity score (Pressure Ulcer Scale for Healing) in the supplemented group differed significantly (P ≤0.033, RMMM) from the control. Moreover, significantly fewer dressings were required per week in the ONS group compared with the control (P ≤0.045, RMMM) and less time was spent per week on changing the dressings (P≤ 0.022, RMMM). At the end of the study, blood vitamin C levels had significantly increased in the ONS group compared with the control (P= 0.015, analysis of variance).



Mean pressure ulcer size (cm^2) in time in the group receiving specific ONS and in the control group. Ulcers if patients in the ONS group healed significantly faster than those of patients in the control group (P=0.006, treatment by time; P=0.016, treatment by $time^2$ repeated-measures mixed models). Data adjusted for centre, represent mean ±SEM (Standard error of mean).

Conclusion: Specific nutritional supplementation accelerated healing of pressure ulcers and decreased wound care intensity in non-malnourished patients, which is likely to decrease overall costs of pressure ulcer treatment.

Cereda, E., Gini, A., Pedrolli, C., Vanotti, A.

Disease-specific, versus standard, nutritional support for the treatment of pressure ulcers in institutionalized older adults: A randomized controlled trial.

J Am Geriatr Soc, 2009. 57: p. 1395-1402.

Objective: To investigate whether a disease-specific nutritional approach is more beneficial than a standard dietary approach to the healing of pressure ulcers (PUs) in institutionalized elderly patients.

Design: Twelve-week follow-up randomized controlled trial (RCT).

Setting: Four long-term care facilities in the province of Como, Italy.

Participants: Twenty-eight elderly subjects with grade II, III, and IV PUs of recent onset (<1 month history).

Intervention: All 28 patients received 30 kcal/kg per day nutritional support; of these, 15 received standard nutrition (hospital diet or standard enteral formula; 16% calories from protein), whereas 13 were administered a disease-specific nutrition treatment consisting of the standard diet plus a 400ml oral supplement or specific enteral formula enriched with protein (20% of the total calories), arginine, zinc, and vitamin C (P<.001 for all nutrients vs control).

Measurements: Ulcer healing was evaluated using the Pressure Ulcer Scale for Healing (PUSH; 0=complete healing, 17=greatest severity) tool and area measurement (mm^2 and %).

Results: The sampled groups were well matched for age, sex, nutritional status, oral intake, type of feeding, and ulcer severity. After 12 weeks, both groups showed significant improvement (P<.001). The treatment produced a higher rate of healing, the PUSH score revealing a significant difference at Week 12 (-6.1+/-2.7 vs -3.3+/-2.4; P<.05) and the reduction in ulcer surface area significantly higher in the treated patients already by Week 8 (-1,140.9+/-669.2 mm^2 vs -571.7+/-391.3 mm^2; P<.05 and ~57% vs ~33%; P<.02).

Conclusion: The rate of PU healing appears to accelerate when a nutrition formula enriched with protein, arginine, zinc, and vitamin C is administered, making such a formula preferable to a standardized one, but the present data require further confirmation by high-quality RCTs conducted on a larger scale.

Heyman, H., Van De Looverbosch, D.E., Meijer E.P., Schols J.M.G.A.

Benefits of an oral nutritional supplement on pressure ulcer healing in long-term care residents.

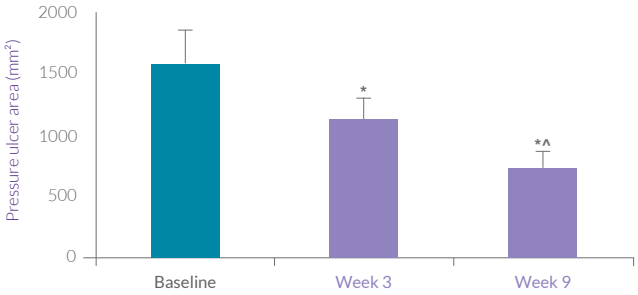
J Wound Care, 2008. 17(11): p. 476-480.

Objective: To investigate the effects of an ONS plus standard care on the healing of pressure ulcers in long-term nursing home residents in addition to standard care. The ONS (Cubitan, Nutricia Advanced Medical Nutrition) was high in energy and protein, and enriched with arginine, vitamin C and zinc.

Method: A total of 245 patients with grade II-IV pressure ulcers were enrolled into this open study at 61 long-term care facilities, which reflect the nursing home population of Luxembourg and Belgium. Residents received the ONS daily for nine weeks, along with their normal diet or enteral feed and standard pressure care. Pressure ulcer area (mm^2) and condition were assessed after three and nine weeks. Data were analysed using ANOVA and expressed as mean ± SD.

Results: The patients' age was 82.2 ± 10.1 years. Sixty-seven patients (27%) had been previously treated with the ONS. The majority of pressure ulcers were located at the sacrum (54%) and heel (32%). The average intake of the 200ml ONS was 2.3 ± 0.56 servings daily, which corresponds to 46g protein, 6.9g arginine, 575mg vitamin C, 87mg vitamin E and 21mg zinc. After nine weeks nutritional support, the average pressure ulcer area reduced significantly from 1580 ± 3743mm^2 to 743 ± 1809mm^2, which is a reduction of 53% ($p<0.0001$). Complete wound closure occurred after three and nine weeks in 7% and 20% of the pressure ulcers respectively. The amount of exudation (assessed subjectively) also decreased after specialised nutritional support ($p<0.0001$).

Mean data ± SE



*P<0.0001 compared with baseline; ^ p<0.0001 compared with week 3, visit 2.

Conclusion: A high-protein ONS enriched with arginine, vitamin C, vitamin E and zinc, when used with standard pressure ulcer care, significantly reduced the mean pressure ulcer area of long-term nursing home residents.

Frias Soriano, L., Lage Vázquez, M., Pérez-Portabella Maristany, C., Xandri Graupera, J., Wouters-Wesseling, W., Wagenaar, L.

The effectiveness of oral nutritional supplementation in the healing of pressure ulcers.

J Wound Care, 2004. 13(8): p. 319-22.

Objective: To investigate the effectiveness of an oral nutritional supplement that is rich in protein and enriched with arginine, vitamin C and zinc on the healing of pressure ulcers.

Method: Thirty-nine patients with Grade 3 or 4 pressure ulcers were enrolled into this open intervention study. Subjects received an oral nutritional supplement daily for three weeks. Wound area and the wound condition of the ulcers were assessed weekly.

Results: After three weeks of supplementation, median wound area reduced significantly ($p<0.001$) from 23.6cm^2 (1.6-176.6cm^2) to 19.2cm^2 (1.2-132.7cm^2), a reduction of 29%. Median healing of wound area was 0.34cm^2 per day, taking approximately two days to heal 1cm^2. Within three weeks the amount of exudate in infected ulcers ($p=0.012$) and the incidence of necrotic tissue ($p=0.001$) reduced significantly.

Conclusion: Nutritional intervention in the form of a specific oral nutritional supplement resulted in a significant reduction in wound area and an improvement in wound condition in patients with grade III and IV pressure ulcers within three weeks.

Wound Area Measurements				
Measurement	Median (range)	Percentage (range)	Median cm^2 healed per day (range)	Median days to heal 1cm^2 (range)
Baseline	23.6 (1.6–176.6)	100	X	X
Week 1	23.6 (1.6–176.6)*	100 (58–127)*	0.00 (-8.4 to +0.9)	0.00 (-5.1 to 5.9)
Week 2	23.6 (1.6–176.6)*	88 (42–119)*	0.27 (-5.0 to +1.3)	1.78 (-29.7 to +71.3)
Week 3	19.2 (1.2–132.7)*	71 (9-133)*	0.34 (-3.6 to +0.9)	1.78 (-44.6 to + 17.8)

*$p<0.05$ analysed versus baseline by Wilcoxon's signed rank test

Benati, G., Delvecchio, S., Cilla, D., Pedone, V.

Impact on pressure ulcer healing of an arginine-enriched nutritional solution in patients with severe cognitive impairment.

Arch Gerontol Geriatr, 2001. 33 Suppl 7: p. 43-7.

Thirty-six in-patients with severe cognitive impairment and pressure ulcers were treated for two weeks with normal hospital diet (A), normal hospital diet plus oral supplementation with high protein calorie solution (B), normal hospital diet plus an oral supplementation with an iso-calorie and iso-protein solution enriched with arginine, vitamins and trace elements with antioxidant effect (C). Preliminary data show that patients with treatment C have a more rapid improvement in pressure ulcer healing than patients with treatment A and B.

HEALTH ECONOMIC STUDIES

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Health Economic Studies

HEALTH ECONOMIC STUDIES

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Cereda E., Klersy C., Serioli M., Andreola M., Pisati R., Schols J., Caccialanza R., D'Andrea F. for OEST Study Group.

Cost-effectiveness of a disease-specific oral nutritional supplement for pressure ulcer healing.

Clinical Nutrition 2017; 36:246-252

Introduction: The Oligo Element Sore Trial has shown that supplementation with a disease specific nutritional formula enriched with arginine, zinc, and antioxidants improves pressure ulcer(PU) healing in malnourished patients compared to an isocalorice-isonitrogenous support. However, the use of such a nutritional formula needs to be supported also by a cost-effectiveness evaluation.

Methods: This economic evaluation e from a local healthcare system perspective e was conducted alongside a multicentre, randomized, controlled trial following a piggy-back approach. The primary efficacy endpoint was the percentage of change in PU area at 8 weeks. The cost analysis focused on: the difference in direct medical costs of local PU care between groups and incremental cost effectiveness ratio (ICER) of nutritional therapy related to significant study endpoints (percentage of change in PU area and ≥40% reduction in PU area at 8 weeks).

Results: Although the experimental formula was more expensive (mean difference: 39.4 Euros; P < 0.001), its use resulted in money saving with respect to both non-nutritional PU care activities (difference, -113.7 Euros; P = 0.001) and costs of local PU care (difference, -74.3 Euros; P = 0.013). Therefore, given its efficacy it proved to be a cost-effective intervention. The robustness of these results was confirmed by the sensitivity analyses.

Conclusion: The use of a disease-specific oral nutritional formula not only results in better healing of PUs, but also reduces the costs of local PU care from a local healthcare system perspective.

Schols J.M.G.A., J. M., Kleijer, C. N., Lourens, C.

Pressure ulcer care: nutritional therapy need not add to costs.

J Wound Care, 2003. 12(2), p. 57-61.

Fewer patients with pressure ulcers in Dutch nursing homes receive nutritional therapy via sip feeds, possibly because of cost concerns. But this therapy would not cost more if it reduced the duration of nursing care by even one day, this paper argues.

Summary of the main points
Nursing home patients are vulnerable to developing pressure ulcers. Yet in the Netherlands fewer are receiving nutritional therapy via sip feeds due to cost concerns.
The authors explored the actual costs of treating pressure ulcers using a mathematical model.
They monitored the basic nursing and extra costs of care in five nursing homes for 48 long-stay patients.
The same mathematical model was modified to make notional calculations on whether introducing sip feeds into treatment routines would add to these costs.
The authors found that if giving patients sip feeds reduced the total number of extra nursing days by only one day, then money could already be saved.
They believe their findings should be the starting point for further research into the beneficial effects of nutritional therapy on wound healing and that money would be saved in the longer term by using these treatments.

PREVENTION STUDIES

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PREVENTION STUDIES

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Hommel, A., Bjorkelund, K.B., Thorngren, K.G., Ulander, K.

Nutritional status among patients with hip fracture in relation to pressure ulcers.

Clin Nutr 2007. 26(5): p. 589-96.

Background & Aims: Patients with a hip fracture often have a poor nutritional status that is associated with increased risk of complications, morbidity and mortality. The aim of this study was to investigate the effects of an improved care intervention in relation to nutritional status and pressure ulcers. An intervention of best practices for patients with hip fracture was introduced, using the available resources effectively and efficiently with a not too complicated or expensive intervention.

Methods: A quasi-experimental study of 478 patients consecutively included between April 1, 2003 and March 31, 2004. A new evidence-based clinical pathway was introduced on October 1, 2003. The results from the first 210 patients in the control group and the last 210 patients in the intervention group are presented in this article.

Results: The total number of patients with a hospital-acquired pressure ulcer was in the intervention group, 19 patients, and in the control group, 39 patients ($p = 0.007$). No patient younger than 65 years developed a pressure ulcer. There were no statistical significant differences between the groups with respect to blood biochemical variables at inclusion. Patients in the control group had higher arm muscle circumference (AMC) ($p = 0.05$), calf circumference (CC) ($p = 0.038$) and body mass index (BMI) ($p = 0.043$) values. Abnormal anthropometrical tests of BMI, triceps skin fold (TSF) <10th percentile and AMC <10th percentile were found in 12 patients in the control group and in 4 patients in the intervention group. None of the 4 patients in the intervention group developed pressure ulcers. However, 2 of the 12 patients in the control group were affected.

Conclusions: It is possible to reduce the development of hospital-acquired pressure ulcers among elderly patients with a hip fracture even though they have poor prefracture nutritional status. Results in this study indicate the value of the new clinical pathway, as number of patients who have developed pressure ulcers during their stay in hospital has been reduced by 50%.

Houwing, R.H., Rozendaal, M., Wouters-Wesseling, W., Beulens, J.W.J., Buskens, E., Haalboom, J.R.

A randomized, double-blind assessment of the effect of nutritional supplementation on the prevention of pressure ulcers in hip-fracture patients.

Clin Nutr, 2003. 22(4): p. 401-5.

Background & Aims: Malnutrition is a risk factor for development of pressure ulcers (PU). Nutritional supplementation may thus reduce the incidence of PU. We investigated the effect of nutritional supplementation on incidence of PU in hip-fracture patients at risk of developing PU.

Methods: Hip-fracture patients (n=103) were included in this double-blind, randomized, placebo-controlled trial. They received 400 ml daily of a supplement enriched with protein, arginine, zinc and antioxidants (n=51) or a non-caloric, waterbased placebo supplement (n=52). Presence and stage of PU were assessed daily for 28 days or until discharge (median: 10 days during supplementation).

Results: Incidence of PU was not different between supplement (55%) and placebo (59%), but incidence of PU grade II showed a 9% difference (difference: 0.091; 95% CI: 0.07-0.25) between supplement (18%) and placebo (28%). Of patients developing PU 57% developed it by the second day. Time of onset (days) showed a trend (P=0.090) towards later onset of PU with supplement (3.6 ± 0.9) than placebo (1.6 ± 0.9).

Conclusions: Hip-fracture patients develop PU at an early stage. Nutritional supplementation may not prevent PU at this stage, but contributes possibly to a delayed onset and progression of PU. Nutritional supplementation may be more effective if initiated earlier.

CASE STUDIES

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CASE STUDIES

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Jacques Neyens, Emanuele Cereda, István Rozsos, Andrea Molnár, Armand Rondas, Martin van Leen and Jos Schols

Effects of an Arginine-enriched Oral Nutritional Supplement on the Healing of Chronic Wounds in Non-Malnourished Patients; A Multicenter Case Series from the Netherlands and Hungary.

J Gerontol Geriatr Res 2017

Objective: Explore the effect of an arginine-enriched oral nutritional supplement (ONS) in non-malnourished patients with a diabetic foot ulcer (DFU), arterial leg ulcer (ALU), venous leg ulcer (VLU) or pressure ulcer (PU). The primary outcome measures were: 1) wound healing progress (complete healing and wound size reduction), 2) patients' compliance to the specific ONS, and 3) patients' rating of the specific ONS.

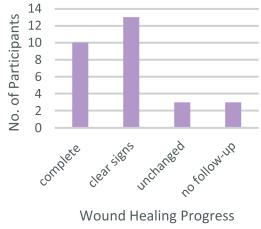
Setting: Patients with chronic wounds were recruited from three clinical centres in the Netherlands and one clinical centre in Hungary.

Participants: Twenty-nine non-malnourished patients were included in the study: seventeen females and twelve males with a mean age of 73.7 years. The chronic wounds involved were DFU (N=9), ALU (N=5), VLU (N=8), and PU (N=7).

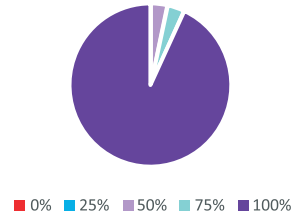
Methods: All participants were offered one to three servings daily of a specific ready to drink arginine-enriched ONS (Cubitan®, Nutricia) in addition to their centre's regular diet and centre's standard wound care, for a maximum of 12 weeks or until complete healing. Besides patient characteristics, information on wound surface area, daily ONS servings, compliance per serving, patients' ONS rating, and photographs of the wounds were recorded monthly over the twelve-week period.

Results: Within 2 to 12 weeks, complete healing occurred in eight ulcers (3 DFUs, 3 VLUs, 4 PUs), thirteen ulcers showed clear signs of healing through decreased wound surface area ranging from 25% to 88% reduction (6 DFU, 3 ALUs, 4 VLUs), and three ulcers kept unchanged (2 ALUs, 1 VLU). Overall, the daily ONS, on average two servings per day (= 400 ml), were almost fully consumed (99.5%), and the patients' rating of the oral nutritional supplement was good.

Participants wound healing progress on arginine-enriched ONS



Participants Compliance with arginine-enriched ONS



Conclusion: Extra nutritional support with a specific ready to drink arginine-enriched oral nutritional supplement seems to be beneficial for the healing of different types of chronic wounds. The patients' compliance with the product was very high, and they rated it as good. Further research, especially prospective randomised controlled studies on arginine-enriched ONS in patients with chronic wounds are necessary.

Neyens J., Rondas A., van Leen M., Schols J.M.G.A.

The Effects of an arginine-enriched oral nutritional supplement on chronic wound healing in non-malnourished patients: a multicentre case study in the Netherlands.

EMWA Journal 2013. 13(2) p. 32-33.

Rationale: A series of cases has been conducted to record the effect of a specific arginine enriched oral nutritional supplement (ONS) in patients with pressure ulcers (PUs), leg ulcers or diabetic foot ulcers. Primary outcome parameters: 1) wound size, 2) patients' compliance and appreciation of ONS.

Methods: Design: case report study, approved by ethic committee, conducted in two Dutch nursing homes and one ambulatory wound centre. Twenty-two non-malnourished patients with a PU, leg ulcer or diabetic foot ulcer, existing > 3 weeks were included. All participants were offered 1-3 servings per day of a specific arginine enriched ONS in addition to their regular diet and standard wound care, for 12 weeks max. Besides patient characteristics, information on wound size (cm^2), product intake plus appreciation and photographs were collected every month.

Results: Fourteen females and eight males (mean age: 80) were included. Main diagnosis: arterial leg ulcer (n=5), venous leg ulcer (n=6), diabetic foot ulcer (n=2) and PU (n=9). Within 7-12 weeks, complete healing occurred in 11 ulcers, 10 showed a partial wound size reduction (35% to 75%) and one kept unchanged. Overall, the daily ONS servings, on average 400 ml, were fully consumed and the appreciation was good (n=22). Patient characteristics and wound healing over the course of the study are depicted in Table 1.

Conclusion: Nutritional support with a specific arginine-enriched ONS seems to be beneficial for the healing of different types of chronic ulcers in non-malnourished patients.

Table 1: Patient characteristics and pressure ulcer, diabetic foot ulcer, and leg ulcer healing

Patient Characteristic (N = 22)	
Mean age (range)	72,8 years (52-95)
Gender	7 Male, 15 Female
Mean BMI (range)	24,8 (20-38)
Mobility	Chairfast (N = 8), Walks occasionally (N = 9), Walks frequently (N = 5)
Existance of wound	< 4 weeks (N = 3), > 1 month < 3 months (N = 5), > 3 months (N = 14)
Wound type	PU (N = 7), DFU (N = 2), PU (N = 7), Arterial LU (N = 5), Venous LU (N = 8)
Mean wound size at start (range)	11cm^2 (1-46)
ONS per day	1 bottle (N = 7), 2 bottles (N = 14), 3 bottles (N = 1)
Healing	(N = 20)
Completely healed	N = 8
Partly healed*	N = 8
No effect	N = 4
Unable to follow up	N = 2

*unable to follow up with one patient after 4 weeks
BMI: body mass index, PU: pressure ulcer, DFU: diabetic foot ulcer, LU: leg ulcer.

REVIEW PAPERS

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REVIEW PAPERS

E. Cereda, J.C.L. Neyens, R. Caccialanza, M. Rondanelli MD, J.M.G.A. Schols.

Efficacy of a disease-specific nutritional support for pressure ulcer healing: A systematic review and meta-analysis.

J Nutr Health Aging 2017

Objectives: The aim of this systematic review was to summarize the evidence on the efficacy of high-calorie, high-protein nutritional formula enriched with arginine, zinc, and antioxidants (disease-specific support) in patients with pressure ulcers (PUs).

Methods: Randomized controlled trials in English published from January 1997 until October 2015 were searched for in electronic databases (EMBASE, Medline, PubMed, and CINAHL). Studies comparing a disease-specific nutritional support (oral supplements or tube feeding) to a control nutritional intervention enabling the satisfaction of energy requirements regardless of the use of high-calorie formula or placebo or no support for at least 4 weeks were considered eligible. Study outcomes were the percentage of change in the PU area, complete healing and reduction in the PU area of ≥40% at 8 weeks, and the percentage of change in area at 4 weeks.

Results: Altogether, 9 studies were included in the qualitative analysis. A total of 3 studies could be included in the meta-analysis, with a sum of 273 participants (disease-specific, N=138; control, N=135); they were all multicentre, mainly conducted in a long-term care setting and substantially of good quality. Compared with control interventions, formulas enriched with arginine, zinc and antioxidants resulted in significantly higher reduction in ulcer area (-15.7% [95%CI, -29.9, -1.5]; P=0.030; I2=58.6%) and a higher proportion of participants having a 40% or greater reduction in PU size (OR=1.72 [95%CI, 1.04, 2.84]; P=0.033; I2=0.0%) at 8 weeks. A nearly significant difference in complete healing at 8 weeks (OR=1.72 [95%CI, 0.86, 3.45]; P=0.127; I2=0.0%) and the percentage of change in the area at 4 weeks (-7.1% [95%CI, -17.4, 3.3]; P=0.180; I2=0.0%) was also observed.

Conclusions: This systematic review shows that the use of formulas enriched with arginine, zinc and antioxidants as oral supplements and tube feeds for at least 8 weeks are associated with improved PU healing compared with standard formulas.

Schols J.M.G.A., Heyman, H., Meijer E.P.

Nutritional support in the treatment and prevention of pressure ulcers: an overview of studies with an arginine enriched Oral Nutritional Supplement.

Journal of Tissue Viability, 2009. 18: 72-9.

Abstract

Under-nutrition, inadequate protein or poor protein and energy intake and unintended weight loss have been identified as independent risk factors for the development of pressure ulcers. Providing oral nutritional supplements (ONS) in addition to regular food intake seems a logical way to replenish body shortages of macro- and micro-nutrients as well as to supply extra nutrients for the preservation of skin tissue, strengthening of tissue resistance, and promoting tissue repair. To examine the effect of nutritional intervention in pressure ulcer care, clinical studies performed with a specific ONS enriched with arginine, vitamin C and zinc were reviewed. Six clinical studies that were performed with the specific ONS, identified via electronic and conference databases, were included in the review. Four studies examined the effects of the specific ONS in patients with pressure ulcers, while two studies examined the effects of the specific ONS in patients at high risk of developing pressure ulcers. The reviewed practice-based studies with the specific ONS specifically developed for patients with pressure ulcers show positive effects of this ONS on pressure ulcer healing and the ONS might potentially reduce the risk of developing pressure ulcers.

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THE ONLY ONS* THAT MEETS NATIONAL[2,9] & INTERNATIONAL[10] WOUND GUIDELINES

- ✓ Suitable for **all wound types**
- ✓ Suitable for patients who are **malnourished and non-malnourished**
- ✓ Contains 2.44g **Added Free Arginine** (3g Total)

Cubitan is suitable for patients with diabetes who have impaired wound healing

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For more information on Cubitan, sample requests, patient information, recipe sheets and dosage guidelines, please contact our customer care team at **Freephone (ROI) 1800 923 404**

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