This meta-analysis study will demonstrate the use of hydrolyzed type I bovine collagen in the use of multi-spectrum wound etiologies and co-morbidities. The sub-cellular mechanism of hydrolyzed collagen and fibrillogenic activity is well known in the literature.

Native collagen is a stable rigidly coiled helix molecule and may be acted on by enzymes to expose the amino acid components. Hydrolyzed collagen is the conversion of the rigid coiled helix to a random coil which supports fibrillogenesis activity needed to produce wound granulation tissue.

Activated collagen is the most biologically active form of collagen available. It principally acts as a major chemo-attractant for epithelialization. Thus, the process of wound closure is potentially facilitated through the use of activated collagen.

To illustrate the use of hydrolyzed (activated) type I bovine collagen on wounds that demonstrated efficacy in patient populations of complex co-morbidities. Patients were randomly selected from diverse socioeconomic backgrounds. Exclusive criteria included patients with osteomyelitis, patients that deceased prior to wound closure and non-adherence to treatment. Inclusion criteria involved wounds from all etiologies: acute traumatic (skin tears), partial and full-thickness burns, metabolic (diabetic, versus I/E, neurogenic, revascularization and wound with bio-burden. Initial treatment methods included full thickness excisional debulking, biological wound debulking, ultrasonic, and mechanical. Application of hydrolyzed bovine collagen in paste and/or powder performed was in accordance with appropriate secondary dressings. Follow-up included per-wound assessment and re-application of hydrolyzed bovine collagen and secondary dressings only.

Evidence based medicine is defined as the concurrence, explicit and judicious use of current best-evidence in making decisions about the care of individual patients. An essential requirement to wound healing is fibroblastic activity whichactivates collagen. Fibroblasts influence migration/proliferation, ECM production, growth factors and cytokine production, angiogenesis and protease release. Migrating epithelium cannot migrate over collagen until fibroblasts create an extracellular matrix granulation tissue to collagen hydrolyzed collagen in order to migrate.

Additionally, those cleaved amino acid segments which were hydrolyzed were "activated" they were prepared to participate in the repair process as a function of their introduction into the biological pool.

Fifty patients (twenty-one shown) representing 11 diverse socio-economic backgrounds; 2 various clinic facilities and settings; 3 complicated co-morbidities and 49 all wound and burn etiologies such as: diabetic, neuropathic, venous stasis, arterial insufficiency, traumatic, acute, chronic, surgical, pressure, skin tears, superficial and 1st and 2nd degree burns were managed with hydrolyzed "activated" collagen powder and/or gel. Some of the patients were compared against a control group which consisted of a hydrogel. The wounds were dressed with an appropriate secondary dressing. The average dressing change frequency was every 3-4 days, some subsequent dressings were changed every 7 days.

Hydrolyzed "activated" collagen is the most biologically active form of collagen available. It principally acts as a major chemo-attractant for epithelialization. "Activated" collagen in 1/100 the size of native, intact collagen and is immediately available for the body to use. In addition to cleaving the "activated" collagen the tribromide in vivo mimics migration/remodeling, ECM production, growth factor, cytokine and interleukin release (IL-8, IL-1, IL-10), angiogenesis and protease release all of which is integral to the production of granulation tissue. This surmised evidence in the patients represented in this study.

Additionally the patient's subjective comments on the reduction of wound pain. This is attributed to the formation of an effusive dressing which "sensed" the presence of an infected wound. "Activated" collagen in both the gel and powder form equally mixed with appropriate topical anti-microbial agents. This biocompatibility was effective in treating the wound infection as well as producing granulation tissue of a large size of the "activated" collagen extremely useful in managing all wound challenges, namely undermining and browning. The overall clinical improvement in hydrolyzed "activated" collagen healed wounds of proper technique far beyond the care as well as compared to the control groups.

A Retrospective Analysis of the Utilization of “Hydrolyzed” Type I Bovine Collagen as Demonstrated in a Wide Variety of Wound Etiologies in Multi-Centers

Contribution from: Gregory B. Pott, Leland Shapiro, M.D. – Department of Medicine, University of Colorado Denver, Denver, CO ∙ Jane Fore, M.D. and Cherie Rash, R.N. – Tri-State Wound Care and Hyperbaric Center, Clarkston, Washington


A Novel Topical Therapy for Pyoderma Gangrenosum using Compounded Hydrolyzed Type I Bovine Collagen
