

## US PATENTS AS OF 08/31/2021

The following are available for licensing.

- 8, 263,069** 9/11/12. *This patent showed that the dyes of plants (anthocyanins and anthocyanins) the precursor of the metabolite protocatechuic acid, turned on the gene for growth hormone IGF-1 in human synovium.*
- 9,486,468** 11/8/16. *This patent secured the intra articular injection route not previously included in the granted patent claims.*
- 9,498,413** 11/22/16. *This was the parent patent showing broad spectrum antibiotic properties and wound healing acceleration.*
- 9,925,152** 3/27/18. *This was a continuation of the parent application that adds 2,4,6 trihydroxybenzaldehyde to the broad-spectrum antibiotic, plus collagen proliferation (i.e. wrinkle treatment) and reduction in scar formation.*
- 9,968,623** 5/15/2018. *This patent secures that protocatechuic acid can only be manufactured and delivered to an end user by the owner of this patent.*
- 9,987,296** 6/5/2018. *This patent was a continuation of 9,925,152 that now allowed for intra-articular injection.*
- 10,004,705** 7/26/2018. *This patent included the metabolites of protocatechuic acid and 2,4,6 trihydroxybenzaldehyde for the destruction of biofilms of MRSA and Pseudomonas on metal, cloth and ceramic.*
- 10, 004,706** 6/26/2018. *This was an expansion of 10,004,705 applications.*
- 10,016,380** 7/10/2018. *This patent expanded the formulation for treatment of implants to include protocatechuic acid, 70% isopropyl alcohol, propylene glycol, and an essential oil.*
- 10,034,842** 7/31/2018. *This patent includes the chemical formulation of 10,016,380 for medical and surgical implants, dental implants and instrumentation. The later for spaying or soaking in solution.*
- 10,143,670** 12/4/18. *This patent secures the use of PCA to coat a **bandage** or dressing at time or treatment and or a commercial preparation for as stated in claim #22 if a wound is a burn, skin break, bone break, muscle tear, puncture, surgical incision*

*site, microdermabrasion site, skin graft site, a wound associated with diabetes, a bed sore, a pressure sore, skin defoliation, or a laceration, and wherein the protocatechuic acid becomes activated by contact with moisture from the wound.*

- 10,265,285** 4/23/2019. *An extension of prior claims that specifically cite PCA as an antibacterial for Propionibacterium acnes.*
- 10,292,946** 5/21/19. This patent extends the use of PCA to the food industry.
- 10,398,664** 9/3/2019. *This is a non-surgical method of loosening biofilms from an implant via ultrasound and then treating without surgery. The treatment would be repeated needle aspirations for infection status and then injection of protocatechuic acid crystals to destroy the biofilms attached to the implant.*
- 10,426,747** 10/1/2019. *This is an extension and further specification of the skin penetration formulation claims for pre-operative skin disinfection and facial acne with concentration above 10%.*
- 10,772,860** 9/15/2020. *This is an extension that includes the disinfectant and sanitizer use emphasizing the residual anti-microbial protocatechuic acid coating the remains on the article and or person after the evaporation of the liquid vehicle.*
- 10,959,969** 3/30/2021. The treatment of COVID19 with protocatechuic acid. *This patent is for treating the patient; oral, intravenous, injection, etc. We cannot say this without some clinical study.*
- 11, 103,471 B2** 8/31/2021. Anti-microbials and the Methods and Use thereof. *This patent is for mitigation of bacteria and virus by coating of personal protective equipment; masks, gowns, hats, shoes, etc.*