
SANA & VRAY

WOUND CARE™

Natural and science-based
wound care for cuts, wounds,
scrapes and burns.

**Fast healing,
happy pets.**

For topical and external use only

SANAVRAY WoundCare® is a new rapid and effective treatment for both acute and chronic wounds in animals.

SANAVRAY is a proprietary formulation from a tropical plant which has been reported in over 700 studies to be highly effective in healing wounds, burns, abrasions and ulcers.

SANAVRAY rapidly stops bleeding, cleans the wound and accelerates healing by promoting the growth of granulation tissue, stimulating fibroblast proliferation and collagen lattice production, and has potent antioxidant, antimicrobial and antifungal properties.

SANAVRAY creates the architecture of new skin, namely: fibroblast proliferation and fibronectin production, plus collagen lattice formation. **This is unique** in the world of wound healing products.

SANAVRAY generates natural bio- debridement via the interaction of tannins in key ingredient combining with albumin to produce spontaneous sloughing.

SANAVRAY can be used with **all types** of wounds – clean, dirty, infected, etc.

SANAVRAY is the product of more than two decades of research on wound healing and tissue repair in leading universities and research centres.

SANAVRAY's source plant *Chromolaena odorata* has been traditionally used to stop bleeding and to promote wound healing in many tropical countries.

A Proprietary Formulation

SANAVRAY contains a proprietary formulation (CO-PA®) of natural phenolic compound that is clinically observed to repair damaged skin by providing hemostasis, anti-oxidant, anti-bacterial and pro-healing support. The proprietary formulation has been tested on human skin cells and found to be safe and nontoxic.

Natural Ingredients

SANAVRAY contains potent organic chemicals, including:

- **Phenolic compounds.** These are among the most studied natural antioxidant compounds, which also present **antimicrobial, anti-inflammatory actions** and can permeate through the skin barrier.
- **Flavonoids.** Known for their antioxidant properties, the ability of flavonoids to absorb ultraviolet (UV) light and modulate signalling pathways that influence cellular function underlies their beneficial effects in skin health. Once inside the cell, flavonoids can bind catalytic ATP-binding sites on a diversity of proteins, thus exerting influence on a wide range of cellular processes.
- **Essential oils.** These help in the healing of scars, reducing itchy sensation and redness, and have a soothing effect on the skin and have antifungal, antibacterial and anti-inflammatory properties.
- **Saponin triterpenoids.** **Saponins** possess antioxidant effects on the skin and protect it against UV damage via inhibiting extracellular matrix degradation and anti-irritation due to their anti-inflammatory action. **Saponins** exhibit antiseptic activities and, in addition, strengthen dermal capillaries thus facilitating wound repair and faster wound healing. In surgical wounds, the **Triterpenes** induce a reduction in time to closure, and this effect was reported in virtually all wound types. Triterpenes also modulate the production of reactive oxygen species (ROS) in the wound microenvironment,

accelerating the process of tissue repair. Triterpenes may also induce cell migration, cell proliferation and collagen deposition.

- **Tannins** protect the skin from inflammation caused by external irritation. They have also been found to reduce cutaneous TNF-alpha levels and ameliorate skin oedema.

The Science behind **SANAVRAY**

Well researched and published by many academic groups including leading institutions such as: Oxford University and the Oxford Wound Healing Institute; Royal Botanic Gardens, Kew; University of Toronto; University of Vienna; University of Tokyo; National University of Singapore.

Over 700 published studies in medical and scientific journals have demonstrated the wound healing properties of the source plant of **SANAVRAY**, *Chromolaena odorata*, which is shown to:

- stimulate *skin cell production* and *collagen lattice formation*.
- increase *skin elasticity* and *reduces scarring*.
- have *antimicrobial, antiviral, antifungal* and *antioxidant* properties and *hemostatic properties* – i.e. stops bleeding.
- be a *powerful antioxidant* and has *antibacterial effects on Gram-positive and Gram-negative bacteria*.
- *accelerate hemostatic and wound healing activities* by altering the expression of genes, including HO-1, TXS, and MMP-9.
- In the presence of **SANAVRAY**, Thromboxane synthase (TXS), a *potent vasoconstrictor and platelet aggregator, was increased* and MMP-9, an *anti-platelet aggregator, was decreased*.

IN VITRO TEST SHOWS THAT AFTER JUST ONE APPLICATION OF CO-PA® ON HUMAN SKIN CELLS, CO-PA® WAS ABLE TO STIMULATE SECRETION OF FIBRONECTIN FROM HUMAN DERMAL FIBROBLASTS TO 236% OF THE CONTROL SAMPLE AFTER 7 DAYS.

In vitro test shows CO-PA® at 50microgram/ml stimulates Secretion of Fibronectin from human dermal fibroblasts at Day-7.

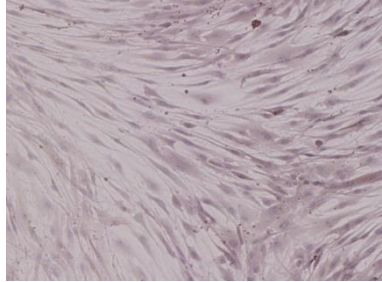
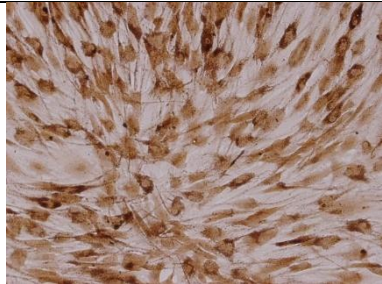
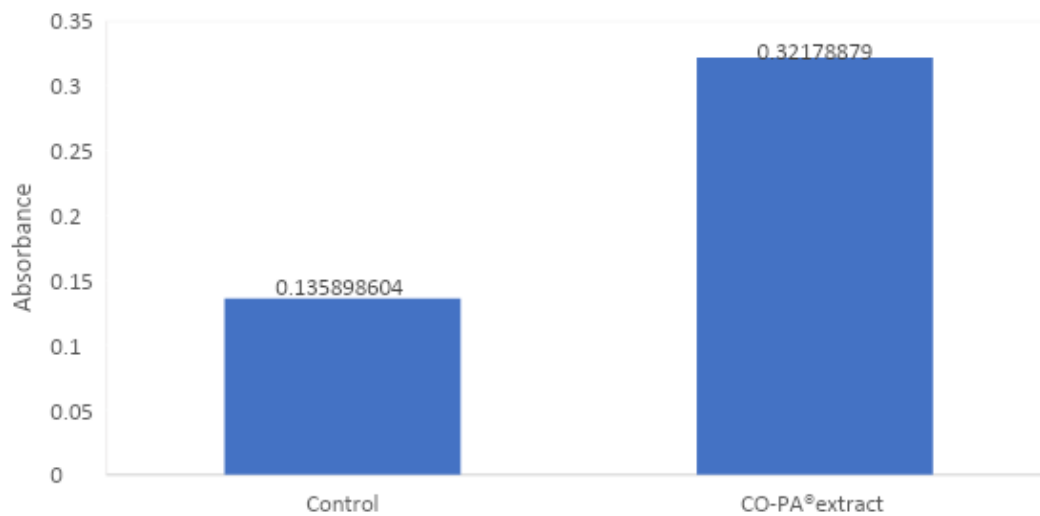
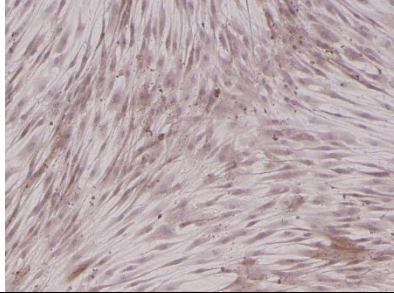
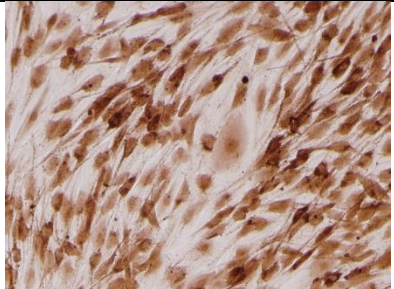
		MAX INTENSITY	MEAN INTENSITY	OPTICAL DENSITY (H DAB)
CONTROL		255	186.484	0.135899
CO-PA® EXTRACT		255	121.549	0.321789

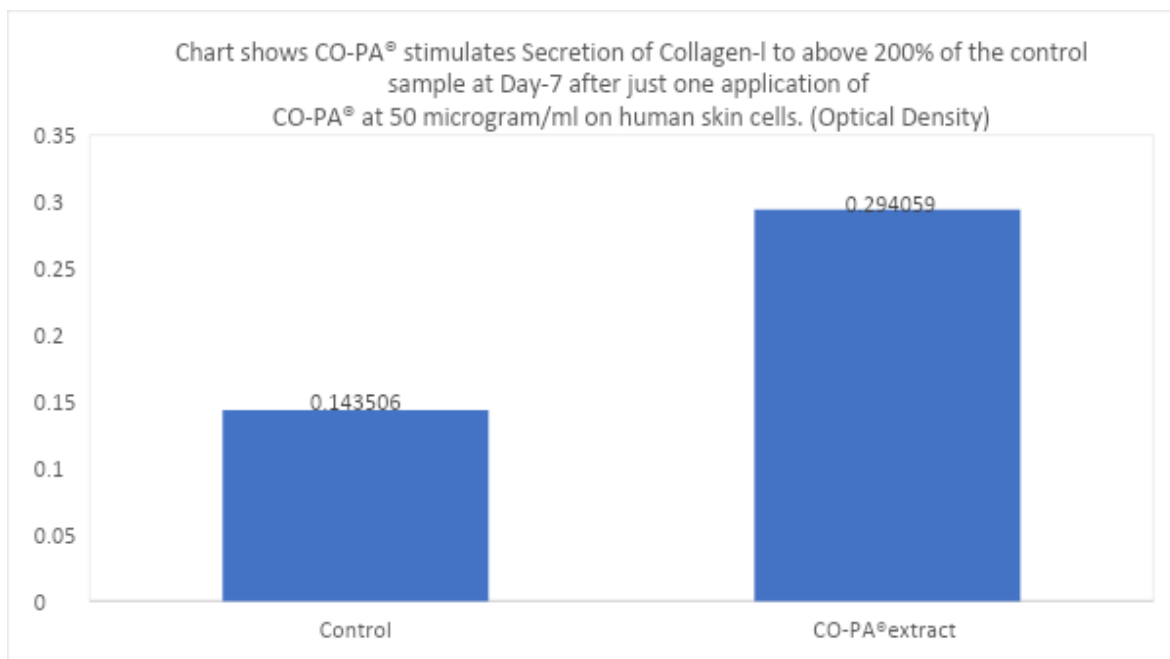
Chart shows CO-PA® stimulates Secretion of Fibronectin to 236% of the control sample at Day-7 after just one application of CO-PA® at 50 microgram/ml on human skin cell. (Optical density)



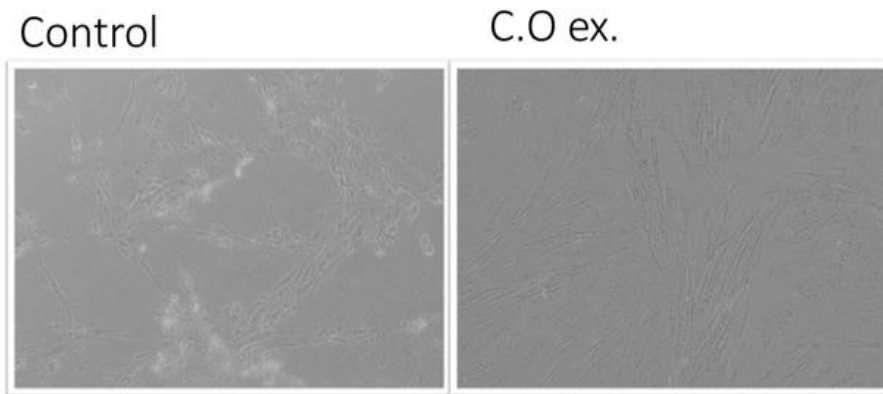
IN VITRO TEST SHOWS THAT JUST AFTER ONE APPLICATION OF CO-PA® ON HUMAN SKIN CELLS, CO-PA® WAS ABLE TO STIMULATE SECRETION OF COLLAGEN-I FROM HUMAN DERMAL FIBROBLAST TO ABOVE 200% OF THE CONTROL SAMPLE AFTER 7 DAYS.

In vitro tests shows CO-PA® at 50microgram/ml stimulates Secretion of Collagen-I from human dermal fibroblasts at Day-7.

		MAX INTENSITY	MEAN INTENSITY	OPTICAL DENSITY (H DAB)
CONTROL		255	183.246	0.143506
CO-PA® EXTRACT		255	129.563	0.294059



INVITRO TEST ON HUMAN SKIN CELLS SHOWS CO-PA EXTRACT AT 100MICROGRAM/ML PROTECTS HUMAN DERMAL FIBROBLASTS AGAINST HYDROGEN PEROXIDE OXIDANT DAMAGE.



After administration of Hydrogen Peroxide, the Control cells are dying. There has been no CO-PA administered. In the C.O. ex sample, there is no cell death by Day 7 after treatment with CO-PA on Day 1. This demonstrates 100% protection in the presence of CO-PA.

Patient Benefits

- Reduction in discomfort, irritation, and pain
- Stops bleeding
- Stops wound exudate
- Removes necrotic tissue
- Removes odour
- Antioxidant effects on ROS in the wound environment
- Removes and prevents bacterial infection
- Promotes rapid skin regeneration and reduces scarring

For the Clinician

- Easy spray-on application
- Fast acting
- Suitable for complex damage and chronic wounds
- Evidence based
- With rapid cessation of bleeding, CO-PA makes wound treatment easier and faster.

Directions for use

Spray on the affected area several times daily or as necessary until recovery is complete. Cover area if necessary.

Scientific Publications

Heiss EH, Tran TV, Zimmermann K, Schwaiger S, Vouk C, Mayerhofer B, Malainer C, Atanasov AG, Stuppner H, Dirsch VM.

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<https://doi.org/10.1021/np400778m>

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Pandith H, Thongpraditchote S, Wongkrajang Y, Gritsanapan W.

In vivo and in vitro hemostatic activity of *Chromolaena odorata* leaf extract. Pharm Biol. 2012 Sep; 50(9):1073-7.

<https://doi.org/10.3109/13880209.2012.656849>

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Pandith H, Zhang X, Liggett J, Min KW, Gritsanapan W, Baek SJ.

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ISRN Dermatol. 2013 Aug 1; 2013:168269.

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Enhanced proliferation of fibroblasts and endothelial cells treated with an extract of the leaves of *Chromolaena odorata* (Eupolin), an herbal remedy for treating wounds.

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Upregulation of adhesion complex proteins and fibronectin by human keratinocytes treated with an aqueous extract from the leaves of *Chromolaena odorata* (Eupolin).
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Phytochemical screening, free radical scavenging and antimicrobial potential of *Chromolaena odorata* leaf extracts against pathogenic bacterium in wound infections – a multispectrum perspective.
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15.10.1016/j.bcab.2018.05.014.
<https://doi.org/10.1016/j.bcab.2018.05.014>

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Efficacy of *Chromolaena odorata* leaf extracts for the healing of rat excision wounds.
Veterinárni Medicína. 62. 565-578. 10.17221/161/2016-VETMED.
<http://dx.doi.org/10.17221/161/2016-VETMED>



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