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# *Copaifera guianesis* stem bark extract may possess antiangiogenic properties

*Nirmal Kumar*

Hemostasis, inflammation, proliferation, as well as maturation and remodelling, are the four precisely timed and partially overlapping steps of the complex and dynamic cascade the body initiates in response to a wound. These processes include the formation of a fibrin clot by the accumulation of thrombocytes, the removal of bacteria and cell debris by white blood cells, the reconstruction of the injured area with new granulation tissue that is vascularized by the ingrowth of blood vessels, and the improvement of tensile strength to the wound by newly formed collagen. In most cases, sanitizing the wound and clearing away any debris to prevent infection are sufficient for treating minor or acute open wounds such as superficial scratches, needle pricks, and shallow cuts. A vast ethnopharmacological heritage with origins in diverse traditional medical practices from the Americas, Africa, Asia, and Europe exists in the Republic of Suriname (South America). As a result, many conventional treatments made from plants are used to treat wounds.

The Department of Pharmacology of the Faculty of Medical Sciences, Anton de Kom University of Suriname, conducted this study on the proangiogenic potential of herbs that are used in Suriname to treat wounds. Brine shrimp, DMSO, and tricaine were all purchased from Sigma-Aldrich, Mediatech, Inc., and Ocean Star International, respectively, all of Salt Lake City, Utah, in the United States (St. Louis, MO, USA). The gathered plant parts were completely cleaned with tap water before being thoroughly washed with distilled water. They were then allowed to air dry before being extracted.

This study assessed the ability of six medicinal plant formulations to promote angiogenesis, which is historically used in Suriname to treat wounds25–30. To this objective, the plant extracts' stimulatory effects on total SIV length in growing Tg (fli1a: EGFP)y1/+ Zebrafish embryos have been evaluated. The *C. guianesis* and *C. guyanesis* stem bark, *P. granatum* fruit, *P. betle, S. Jamaicans*, and *U. Guianesis* leaves, as well as other plants and plant parts, were the subjects of the study. In mouse models, preparations made from C. Guianese's seed oil and leaf accelerated wound healing. The *C. guianesis* stem bark extract appears to have an antiangiogenic impact, which contrasts with the andiroba oil made from the plant's seed's previously documented proangiogenic properties.

In a scratch-wound healing assay, a methanol extract from P. betle leaves enhanced the growth of fibroblasts36, suggesting that it has proangiogenic effects. On the other hand, Wistar rats with stomach cancer caused by N-methyl-N-nitro N-nitrosoguanidine demonstrated chemopreventive and antiangiogenic activity when exposed to the abundantly prevalent phenolic component eugenol from

*P. betle* leaves. The findings of this study imply that proangiogenic effects in the wound area cannot account for the traditional use of preparations made from *C. guianesis and C. guyanesis* stem bark, *P. granatum* fruit, as well as *P. betle, S. Jamaicans*, and *U. guianesis* leaf for wound healing. Other mechanisms than the encouragement of blood vessel creation may be responsible for the plants' alleged wound healing-stimulating properties.

JOURNAL REFERENCE

Mans, D.R.A., P. Magali and A. Sardjoepersad, 2021. Angiogenesis-interfering potential of wound healing plants in subintestinal blood vessels of Tg(fli1a:EGFP)y1/+zebrafish embryos. Res. J. Med. Plants, 15: 7-17.

KEYWORDS

Suriname, traditional medicine, medicinal plants, wound healing, Tg (fli1a: EGFP)y1/+Zebrafish, sub intestinal vessels, angiogenesis