IJARSCT
ISSN (Online) 2581-9429
International Journal of Advanced Research in Science, Communication and Technology (IJARSCT)
Volume 2, Issue 2, March 2022
Impact Factor: 6.252

Development of Antimicrobial Wound Dressing Bandage using *Chromolaena Odorata* Leaf Extract

T. H. Sukirtha[1], Mohanadoss Ponraj[2], Aruna U[1]
Department of Microbiology, Nehru Arts and Science College, Coimbatore, India[1]
Department of Biological Sciences[2]
School of Mathematics and Natural Sciences, The Copperbelt University, Kitwe, Zambia[2]
Corresponding Author: goldking1977@gmail.com[2]

Abstract: *A bandage is a standard of biomaterial used on wounds to protect from infections and to cure wounds. The adhesive bandage also known as sticking plaster protects the wound from friction, bacteria, damage, and dirt. In this study, the leaf extracts of plant (Chromolaena odorata) coated on textiles are being used as a potential drug to promote wound healing. The phytochemical screening and antimicrobial activities of the ethanolic plant leaf extracts was carried out. The leaf extracts were coated on non-woven viscose rayon fabric using Pad-dry cure method. The physical and biological parameters of the coated fabric were analyzed to determine the process of wound healing. The parameters of pH and absorbency were evaluated using the standard protocols obtained from medical textiles. The antimicrobial efficiency (standard protocol AATCC 100), cytotoxicity (MTT assay) and in vitro scratch wound assay using cell lines was studied. The results showed that developed herbal coated bio-bandage featured all the characteristics for ideal dressing. Therefore, it can be promoted as novel bio-bandage for the healing of wounds.*

Keywords: Phytochemical, Bio-bandage, Cytotoxicity, Pad-dry cure method, *Chromolaena odorata*

REFERENCES

[1]. AATCC 100: (2004)., Antibacterial Finishes on Textile Materials: Assessment of developed from the American Association of Textile Chemists and Colorists.
[2]. AOAC: (2005), Official methods of analysis, 18th edn., Association of Official Analytical Chemists, Washington DC, USA.
[3]. Matawali. A., Chin L.P., Eng H.S., Gansau J.A. (2016). Antibacterial and phytochemical investigations of Mikania micrantha HBK (Asteraceae) from Sabah, Malaysia. Trans. Sci. Technol. 3(1–2),244–250.
[4]. Akinpelu B.A., Igbeneghu O.A., Awotunde A.I., Iwalewa E.O., Oyedapo E.O.O.O., (2014). Antioxidant and antibacterial activities of saponin fractions of Erythropheleum suaveolens (Guill. and Perri.) stem bark extract. Sci. Res. Essays. 9(18), 826–833.
[5]. Baxter E. (2015). Complete crime scene investigation handbook: CRC press.,31–3.
[6]. Dowsett C, Newton H. (2005). Wound bed preparation: TIME in practice. WOUNDS UK.; 1:58–70.
[7]. Eriksson and Sandsjo (2015). Three-dimensional Fabrics as Medical Texiles, Advances in 3D Textiles, Publisher: Wood head Publishing, Chapter: 12:305-340.
[8]. Akiyama H., Fujii K., Yamasaki O., Oono T., Iwatsuki K., (2001). Antibacterial action of several tannins against Staphylococcus aureus. J. Antimicrob. Chemother., 48(4), 487–491.
[9]. Hunt TK, Hopf H, Hussain Z. (2000). Physiology of wound healing. Adv Skin Wound Care; 13:6–11.
[10]. ISO 3071:(2005(E)). Textiles — Determination of pH of aqueous extracts.
[11]. Cowan M.M., (1999). Plant products as antimicrobial agents. Clin. Microbiol. Rev. 12(4), 564–582.
[12]. Prabhu, V., Ravi, S., (2012). Isolation of a novel triterpene from the essential oil of fresh leaves of *Chromolaena odorata* and its *in vitro* cytotoxic activity against HepG2 cancer cell line. Journal of Applied Pharmaceutical Science 2:132-136
[13]. Epand R.F., Savage P.B., Epand R.M., (2007). Bacterial lipid composition and the antimicrobial efficacy of cationic steroid compounds (Ceragenins). Biochim. Biophys. Acta. Biomembr., 1768(10), 2500–2509.

IJARSCT
ISSN (Online) 2581-9429
International Journal of Advanced Research in Science, Communication and Technology (IJARSCT)
Volume 2, Issue 2, March 2022
Impact Factor: 6.252

[14]. Rajendran S, Anand SC. (2011) Hi-tech textiles for interactive wound therapies: Handbook of Medical Textiles.
[15]. Rivera AE, Spencer JM. (2007). Clinical aspects of full-thickness wound healing. Clin Dermatol. 25:39–48.
[16]. Robson MC, Steed DL, Franz MG. (2001). Wound healing: biological features and approaches to maximize healing trajectories. Curr Prob Surg. 38:77–89.
[17]. Gurrapu S., Mamidala E., (2017). In vitro antibacterial activity of alkaloids isolated from leaves of Eclipta alba against human pathogenic bacteria. Pharmacogn. J., 9(4), 573–577.
[18]. Schreml S, Szeimies RM, Prantl L, Karrer S, Landthaler M, Babilas P. (2010). Oxygen in acute and chronic wound healing. Br J Dermatol. 163:257–68.
[19]. Strecker-McGraw MK, Jones TR, Baer DG.(2007). Soft tissue wounds and principles of healing. Emerg Med Clin North Am. 25:1–22.
[20]. Szycher M, Lee SJ. (1992) Modern wound dressings: a systemic approach to wound healing. J Biomater Appl. 7:142–213.
[21]. Cushnie T.T., Cushnie B., Lamb A.J., (2014). Alkaloids: an overview of their antibacterial, antibiotic-enhancing and antivirulence activities. Int. J. Antimicrob. Agents. 44(5), 377–386.
[22]. Vloemans AF, Soesman AM, Kreis RW, and Middelkoop E: (2001). A newly developed hydrofibre dressing in the treatment of partial-thickness burns. Burns. 27: 167.
[23]. Zhang W.Q., Lin G.L. and Ye C.W. (2018).Techniques for extraction and isolation of natural products: a comprehensive review. Chinese Medicine.13(20),1-26.