A novel substitute to the commercial zinc antibacterial drugs; zinc aspirinate and a possible implementation in wound healing

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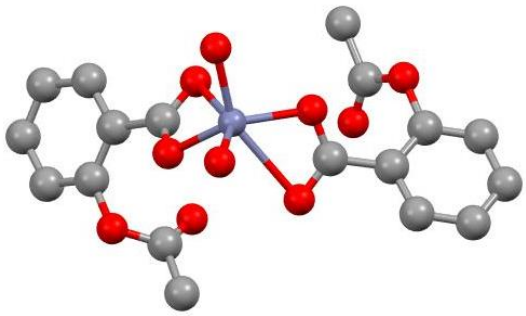
Wound repair is a biological process containing two distinct stages: (i) inflammation and (ii) new tissue formation [1]. Zinc is a structural constituent of enzymes belonging to cellular signaling pathways and is also found to promote soft tissue formation. Zinc oxides exhibit good anti-bacterial and antifungal properties by preventing infections. Salicylic acid has been used on burn wounds, as an ingredient of creams due to its high anti-inflammatory activity [1].

In the course of our study for the development of new wound healing materials [1] the conjugate of Zn(II) with acetylsalicylic acid of formula $[Zn(aspirinate)_2(H_2O)_2]$ was synthesized. The material $[Zn(aspirinate)_2(H_2O)_2]$ was characterized by melting point and spectroscopic techniques XRF, ATR-FTIR, UV/Vis. In the case of $[Zn(aspirinate)_2(H_2O)_2]$ cryoscopy was employed for the molecular weight's determination. The single crystal X-ray molecular structure of $[Zn(aspirinate)_2(H_2O)_2]$ was refined. The antibacterial activity of $[Zn(aspirinate)_2(H_2O)_2]$ was evaluated against Gramm negative bacterial species which colonize wounds: *Pseudomonas aeruginosa* (*P. aeruginosa*), *Escherichia coli* (*E.coli*) and Gramm positive ones: *Staphylococcus epidermidis* (*S. epidermidis*) and *Staphylococcus aureus* (*S. aureus*).



References

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