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EVALUATION OF OCTENIDINE DIHYDROCHLORIDE AS ANTIMICROBIAL COMPONENT IN THE HYALURONAN-BASED WOUND DRESSING

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Octenidine dihydrochloride,N,N'-(decane-1,10-diyldi-pyridin-1-yl-4-ylidene)dioctan-1-amine dihydrochloride (OCT) is a safe and effective alternative to traditional antiseptics in wound care[1–3]. Current therapeutical approaches are mostly based on the moist healing and hyaluronan (SH) represents one of the most promising agents for its hydration and healing action[4]. Nevertheless, polyanionic SH and cationic surfactant OCT are obviously incompatible. The aim of this study was therefore to develop a simple to use wound dressing where both the active components could be combined. The experimental dressings were of the 4-layer tea-bag structure and the lyophilized mixture of OCT and SH (15 g m^{-2}) was deposited in the contact layer. Dressings with ratios of OCT to SH from 1:25 to 1:800 (w:w) were tested *in vitro* against selected wound pathogens, and *in vivo*, on healthy Wistar rats with experimentally induced full-thickness excision. *In vitro*, wound dressing at all tested ratios fully inhibited all the model microorganisms: *Staphylococcus aureus* (ATCC 6538), *Bacillus subtilis* (6633), *Pseudomonas aeruginosa* (9027) and *Candida albicans* (10231). Histological analysis showed, that under the dressings 1:25 – 1:200 the granulation tissue formation and whole healing process was significantly affected by OCT in the dose-dependent manner. In contrast, treatment with 1:400 and 1:800 was similar in its healing effect to SH alone. In conclusion: if OCT was combined with SH in ratios 1:400 – 1:800, no incompatibilites or adverse biological effects occured and the wound dressing showed both healing-promoting and antimicrobial properties. The given range of OCT:SH ratios may therefore be recommended for clinical use.

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NOVEL DIKETO-PYRROLO-PYRROLES ORGANIC DERIVATIVES FOR OPTICAL APPLICATIONS

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In order to study the influence of end substituents added to form chromophore derivatives for the purpose of producing organic light emitting compounds, one should go through the study of several optical processes. Among many interesting materials, the diketo-pyrrolo-pyrrolesderivatives are considered as particularly inquiring high performant light emitting coumpounds. Due to their specialoptical properties, there is wide range of possible applications which have been already investigated covering for example latent pigment, charge generating materials for laser printers, information storage systems and solid-state dye lasers or gas detectors. In this contribution, one and two photon absorption and also amplified spontaneous emission measurement technics were conducted for the optical study of these DPP derivatives.

The one and two photon emission spectra measurements were obtained by the search of the precise and appropriate concentration of the samples. This was needed to be tested and found according to the incoming laser beam energy, precise enough to be able to get significant results avoiding reabsorption or diffusion effects on the molecules when excited.

By narrowing the shape of the incident laser beam perpendicularly on the thin layer and increasing its energy, one could observe the out coming energy from the sample waveguide's edge and examinate the narrowing of the emission spectra corresponding to "superluminescence". Amplified spontaneous emission spectra were obtained by doping certain polymer withparticular DPP derivatives.

All these results provided a better understanding of the influence of different kind of pendent side groups of new derivatives and their physical optical properties[1].

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