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3-arylglyceric acid-derived plant polyether: Prospective therapeutic agent

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A new series of linear and regular 3-arylglyceric acid-derived polyether, namely poly[oxy-1-carboxy-2-(3,4-dihydroxyphenyl) ethylene] or poly[3-(3,4-dihydroxyphenyl)glyceric acid] (PDPGA) was isolated and identified in the water-soluble, high-molecular weight fractions obtained from extracts of different species of comfrey and bugloss. According to data of 13C, 1H NMR, APT, 2D 1H/13C HSQC, 1D NOE and 2D DOSY experiments the polyoxyethylene chain is the backbone of the polymer molecule. 3,4-dihydroxyphenyl and carboxyl groups are regular substituents at two carbon atoms in the chain. The repeating unit of this regular polymer is 3-(3,4-dihydroxyphenyl)glyceric acid residue. Then basic monomeric moiety of this polymer, 3-(3,4-dihydroxyphenyl) glyceric acid (DPGA) was synthesized via Sharpless asymmetric dihydroxylation of trans-caffeic acid derivatives using an osmium catalyst. It is well known that epoxides are valuable synthons in organic synthesis and have been introduced into pharmaceutical applications, such as in the synthesis of antitumor drugs. Subsequently, the building block for the production of derivatives of PDPGA, methyl 3-(3,4-dimethoxyphenyl)glycidate was synthesized based on the Darzen reaction or by oxidation with oxone in order to produce in future derivatives of synthetic analogue of natural polymer through ring-opening polymerization of 2,3-disubstituted oxirane. PDPGA is endowed with intriguing pharmacological properties as anticomplementary, antioxidant, anti-inflammatory, burn and wound healing and anticancer properties. PDPGA and DPGA exerted anticancer activity *in vitro* and *in vivo* against human prostate cancer (PCA) cells. However, anticancer efficacy of PDPGA is more effective compared to its synthetic monomer. Overall, this study identifies PDPGA as a potent agent against PCA without any toxicity and supports its clinical application.

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Ciprofloxacin for the treatment of non-resolving pneumonia in a tertiary care pediatric hospital

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Purpose: Data regarding the use of ciprofloxacin in children with no resolving pneumonia are scarce. The present study aims to evaluate the effect of ciprofloxacin therapy in pediatric patients with non-resolving pneumonia.

Methods: Over the past year, all pediatric patients with non-resolving pneumonia who received ciprofloxacin treatment in the pulmonary unit of Al-Rantisy Specialized Pediatric Hospital in Gaza, Palestine, were included in this retrospective study. Ciprofloxacin was given for all patients in a dose of 20 mg/kg/day divided into two doses. Patient demographic data, clinical symptoms recorded, sputum culture findings and ciprofloxacin therapeutic outcome were gathered. Data were analyzed using computer software SPSS version 11.

Results: The study included 57 patients with non-resolving pneumonia, 36 males and 21 females with mean age of 3.4 years, ranged from 2 months to 8 years. Fever (73.7%) and cough (89.5%) were the most common symptoms. Positive culture was obtained in 42 (73.6%) patients while 15 (26.4%) showed negative results. The most common organism isolated in the positive cultures was Pseudomonas aeruginosa 26 (62.0%). Among the study sample, 23 (40.4%) patients received ciprofloxacin as empirical therapy and 34 (59.6%) received this drug depending on culture sensitivity results. There was a significant decrease in body temperature levels ($P<0.001$) at day 1, 2 and 3 of ciprofloxacin treatment. Overall, ciprofloxacin was effective in the treatment of 53 (93.0%) patients of the present study. Only 4 (7%) cases showed resistant to this therapy. The mean length of hospital stay was 7.5 days. No side effects were reported during the course of this study.

Conclusion: Data of the present study suggest that ciprofloxacin is effective and safe, including as initial monotherapy, for the treatment of pediatric patients with no resolving pneumonia.

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