

THERAPEUTIC ADVANCES in *Drug Safety*

Contents

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allied with transdermal delivery offer an alternative to oral ibuprofen, harnessing its anti-inflammatory effect while reducing toxicity by bypassing direct gastrointestinal tract exposure. **Objectives:** The aim of this study is to evaluate the efficacy and safety of transdermal ibuprofen-based ionic liquids, [N1,1,6,2OH1][Ibu] and [N1,1,8,2OH1][Ibu]. **Methods:** The human immortalized keratinocyte cell line, HaCaT, was treated for 24 hours with 20 µg/mL and 40 µg/mL of [N1,1,6,2OH1][Ibu] and [N1,1,8,2OH1][Ibu]. Several assays were performed to evaluate cellular proliferation, viability, and cytotoxicity. Chronic colitis was induced in female CD-1 mice by weekly intrarectal administrations of 1% 2,4,6 trinitrobenzenesulfonic acid (TNBS) for 5 weeks. Mice were treated for 14 consecutive days with transdermal patches containing either [N1,1,6,2OH1][Ibu] or [N1,1,8,2OH1][Ibu], at doses of 20 mg/kg/day or 40 mg/kg/day. Physiological, biochemical, and histological parameters were evaluated; **Results:** Ibuprofen-based ionic liquids exhibit no toxicity towards HaCaT cells and demonstrated *in vivo* anti-inflammatory effect through the reduction of fecal hemoglobin, fecal calprotectin, alkaline phosphatase, tumor necrosis factor alpha, and interleukin-10. Macroscopic score confirmed the absence of gastric mucosa lesions; **Conclusions:** These findings support transdermal ibuprofen-based ionic liquids as a non-invasive, safe and effective strategy for the future management of inflammatory bowel disease.

Keywords: Ibuprofen-based Ionic Liquids, Transdermal Delivery, Inflammatory Bowel Disease

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Abstract-Post-73 Other

A review of in vitro and in vivo studies on the therapeutic potential of piperine in breast cancer

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Background: Breast cancer is the most prevalent neoplasm among Portuguese women. Therefore, more effective and less toxic therapeutic approaches are necessary. Piperine, an alkaloid found in black pepper (*Piper nigrum*), exhibits cytotoxic and chemoprotective properties [1]. **Objectives:** To discuss the *in vitro* and *in vivo* effects of piperine on breast cancer cell lines and mice models. **Methods:** Literature review using the PubMed®, Science Direct® and Directory of Open Access Journals® databases and keywords “piperine”, “*Piper nigrum*”, “breast cancer”, “cytotoxicity”, “cancer therapy”, “tumor growth inhibition”. *In vitro* and *in vivo* studies exploring the role of piperine in breast cancer were included; articles using analogues and plant extracts with compounds other than piperine were excluded. **Results:** A total of 16 studies were included using different cancer cell lines (e.g. MDA-MB-231, MDA-MB-468, 4T1, MCF-7, T-47D) and mice models. Piperine exerts an antitumor activity by inhibiting cell proliferation, inducing apoptosis and negatively modulating cell cycle regulatory proteins. When combined with conventional therapies, piperine may help reduce chemotherapy doses by overcoming drug resistance and minimizing chemotherapy-associated side effects [2,3]. A reduction in tumor size was observed with the intraperitoneal co-administration of piperine (0.1 to 50 mg/kg/day) and other drugs. **Conclusions:** Piperine may act both as an isolated cytotoxic agent and in combination with other therapeutics. However, the methodological heterogeneity of studies, along with the scarcity of clinical trials, underscores the need for further investigation to validate its clinical applicability and contribute to less invasive approaches.

Keywords: Piperine, *Piper nigrum*, Breast Cancer

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Abstract-Post-74 Other

Occupational stress in community pharmacy professionals: a cross-sectional study

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Background: The study of mental health in health professionals, including community pharmacy professionals, is relevant due to their continuous exposure to emotionally stressful situations [1]. Work-related stress, burnout and intense routine significantly affect the quality of life [2,3].

Objective: To assess the stress levels of pharmacy professionals in the Bragança and Lisbon districts, different regions from Portugal, analysing the influence of sociodemographic and professional variables. **Methods:** Quantitative, cross-sectional, descriptive and correlational study with 127 community pharmacy professionals' participants. Data were collected through a questionnaire with two parts: one for sociodemographic variables (gender, age, marital status, number of children, professional role, chronic illness, physical activity, and salary), and the second for assessing stress using the QSO-VG scale. **Results:** Stress levels were similar between Bragança (1.78) and Lisbon (1.82). The main reported causes of stress included lack of time with family and friends, work overload,

inadequate salary, and negative attitudes from users. Only gender showed a statistically significant association with stress: men reported higher stress levels in Bragança (2.04), while women reported higher levels in Lisbon (1.92). No significant associations were found with the other sociodemographic variables studied. **Conclusion:** There was no significant stress level's difference between different regions from Portugal. However, stress levels are significant in these regions, and it is necessary to improve working conditions and reduce the workload of the pharmacy professional's community.

Keywords: Community pharmacy; occupational stress; pharmacy professionals.

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Abstract-Post-75 Other

Aromatic and medicinal galactagogue plants: analysis of labelling information from online dietary supplements

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Background: Breast milk provides both physical and psychological benefits for the mother and the infant. In cases of insufficient milk production, plants with galactagogue properties are considered an option, with traditional reports supporting their use [1,2]. **Objectives:** To collect and