exploitation zones, as well as for the threaten of biodiversity that paves the way for proliferation of invasive species and disease spread. Current regulations and enforcement, both at national and international levels, have been ineffective in controlling the dimension of the problem. We compiled and discussed the available information on the illegal trade of wild-harvested fauna and flora. **Objectives:** By focusing on the particularities, targets and financial flows of the organised wildlife crime, we aimed at comprehensively identifying the impact and extent of such phenomenon to provide assistance to law enforcement authorities in refocusing efforts to fight the illicit commerce of the most prominent species. **Methods:** A comprehensive bibliographic search was performed in the Web of Science database to collect relevant articles addressing the illegal wildlife problem, as well as in sites from intergovernmental and non-governmental organisations, international coalitions, agreements or conventions associated with the wildlife trade, including but not limited to the UNODC, the WWF and TRAFFIC. The IUCN Red List of Threatened SpeciesTM database was also consulted to assess the conservation status. In addition, a Google search was performed and reports from news media outlets, such as The Guardian, South China Morning Post, Agence France-Presse and BBC News, were reviewed to find additional relevant publications. The bibliography of all documents was extensively reviewed to find other relevant publications. **Results:** Motivations behind this type of criminality may vary and go beyond the pursuit of profit, resulting, for instance, from thrill-seeking connected to sport or food, as a part of cultural traditions, or hostility and disrespect towards law enforcement and governments [1]. Also, culture and fashion trends deeply influence the consumption of wildlife products. Consequently, one-fifth of the global wildlife trade is attributable to increased demand for animals used as pets and entertainment purposes [2]. Hundreds of millions of plants and animals are imported to fulfil the continuous consumer demand, which currently exceeds what can be legally supplied for trophies, pets, food, clothing, decorative items, and traditional medicine [3-5]. Furthermore, human welfare and safety is also a concern, as illegal wildlife trade is often linked to organised criminal networks, which perpetrate crimes and use violence against rangers and wildlife crime officers tasked with protecting wildlife. **Conclusions:** The illegal wildlife trade is a complex, heterogeneous and constantly evolving issue that carries substantial risk for ecological conservation and human health. To provide an effective response and overcome the current global conservation crisis, better interdisciplinary and systemic wildlife trade regulation is imperative, focusing on the specific areas of the illicit traffic.

Keywords: wildlife crime; endangered species; fauna and flora trading; CITES, Convention on International Trade in Endangered Species of Wild Fauna and Flora; criminology

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Synthesis and fluorexcence studies of a xanthone-phosphatidylethanolamine bioconjugate: a promising molecular probe for cancer detection?

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Resumo

Introduction: Lipid dysregulation has been related to cancer and, therefore, the identification of changes

in the lipid metabolism of cancer cells can benefit the development of new therapeutic targets. The dysregulation of lipids such as sphingolipids, lysophospholipids, and glycerophospholipids have been associated to breast cancer, ovarian cancer, hepatocellular carcinoma, and prostate cancer [1,2]. The study and quantification of lipids in biological systems generally involves measuring the fluorescence of labelled lipids. The use of this methodology for cellular and molecular imaging is mostly related with highly sensitive detection [3]. However, the use of this biosensors is limited due to complex synthetic routes with a considerable number of steps and reactions that result in low-yield, expensive, and time-consuming procedures [4]. Moreover, depending on the application envisioned new synthetic protocols for the tailored fluorescent lipid probes are required. Xanthone- and xanthene-based compounds have been used as small organic dyes and fluorescent probes due to the fluorescence maximum in the visible region of the spectrum, high fluorescence quantum yield, and large Stokes shift [5]. Hence, the project described herein considers the synthesis and evaluation of the spectroscopic fluorescence properties of lipids tagged with xanthone derivatives for assessment of cancer-related lipid phenomena studies. **Objectives:** Synthesis of a xanthone-phosphatidylethanolamine (POPE-XCAR) probe with spectroscopic properties suitable for fluorescence applications. **Material and Methods:** In this work, a method based on the use of an uronium-type coupling reagent was chosen for the bioconjugation of POPE with a carboxyxanthone. After product purification by column chromatography the molecular structure of the POPE-XCAR probe was confirmed by using NMR spectroscopy. In order to evaluate the solvatochromic properties of the probe, the absorption and fluorescence spectra in solvents with different polarities was evaluated. **Results:** The POPE-XCAR probe was obtained in 50% yield after purification. The NMR studies confirmed the formation of the new amide bond. The spectroscopic studies unveiled a significant solvatochromic effect along with a fluorescence intensity dependence on the solvent properties. **Conclusions:** The bioconjugation of POPE with XCAR was successful. The spectroscopy studies revealed the potential use of the new molecule as a fluorescence probe.

Keywords: lipid probe; fluorescence; cancer; xanthone.

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