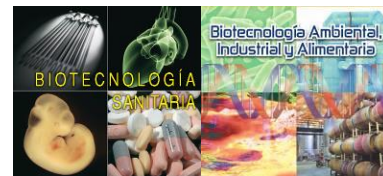


## Talk

## Biological activity studies on marine natural products as therapeutic strategies in in vitro models of inflammation and colon cancer



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### ABSTRACT

**Motivation:** The inflammatory response is a highly regulated process, and its dysregulation can lead to the establishment of chronic inflammation and, in some cases, it is the cause of several diseases, including cancer. Marine invertebrates are exceptional sources of new natural products, such as terpenoids, which are secondary metabolites that can exhibit anti-inflammatory and anticancerogenic activities. Colon cancer is a disease with a high genetic factor in which inflammation, and therefore its mediators, play an important role. This study focuses on the analysis of the biological activity of various natural terpenoids isolated from marine corals.

**Methods:** HT-29 cells (human adenocarcinoma colon cell line) were grown in McCoy's 5A and THP-1 cells (human monocytic leukemia cell line) in RPMI1640, both supplemented with 10% FBS and Strep/Pen (37°C in 5% CO<sub>2</sub> atmosphere). Cytotoxic activity was evaluated with the sulforhodamine (SRB) assay. The anti-inflammatory activity was tested on THP-1 through quantification of TNF-alpha, IL-6, IL-8, IL-1B and IL-10 by ELISA and COX-2 and iNOS levels by western-blot. Adherent macrophages were treated with terpenoids (10, 20 and 50 µM) for 1h, followed by stimulation of 1µg/mL LPS for 24h in both assays. Antioxidant activity was measured by ABTS assay.

**Results:** Terpenes showed a moderate cytotoxic activity in both HT-29 and THP-1 macrophages after 48 and 72h. Pre-treatment with these compounds significantly reduced LPS-stimulated cytokines production in THP-1 cells as well as attenuated LPS-induced COX-2 and iNOS protein expression after 24 h. In addition, ABTS assay showed a low antioxidant activity.

**Conclusions:** The five terpenes present a moderate antioxidant and cytotoxic activity as well as a potent anti-inflammatory effect in vitro. This kind of marine natural products may represent an interesting alternative for the treatment of inflammation-related diseases or cancer.

### REFERENCES

- González, Y., Torres-Mendoza, D., Jones, E.G. and Fernandez P.L. (2015) Marine Diterpenoids as Potential Anti-inflammatory Agents. *Mediators of Inflammation*. doi: 10.1155/2015/263543
- Aggarwal BB1, Shishodia S, Sandur SK, Pandey MK, Sethi G. (2006) Inflammation and cancer: how hot is the link? *Biochem Pharmacol*. 72(11):1605-21.
- Skehan, P., Storgen, R., Scudiero, D., et al. (1990) New colorimetric cytotoxicity assay for anticancer-drug screening. *J Natl Cancer Inst*. 82: 1107-12.