

The role of the marine environment in the development of anticancer drugs has been widely reviewed, particularly in recent years. However, the innovation in terms of clinical benefits has not been duly emphasized, although there are important breakthroughs associated with the use of marine-derived anticancer agents that have altered the current paradigm in chemotherapy. In addition, the discovery and development of marine drugs has been extremely rewarding with significant scientific gains, such as the discovery of new anticancer mechanisms of action as well as novel molecular targets. Approximately 50 years since the approval of cytarabine, the marine-derived anticancer pharmaceutical pipeline includes four approved drugs and eighteen agents in clinical trials, six of which are in late development. Thus, the dynamic pharmaceutical pipeline consisting of approved and developmental marine-derived anticancer agents offers new hopes and new tools in the treatment of patients afflicted with previously intractable types of cancer ¹⁾.

In the future, [chemotherapy](#) with new [anticancer agents](#), [immunotherapy](#), and new methods of [radiotherapy](#) and [gene therapy](#) will be developed; however, [ALA](#) will play a key role in [malignant glioma](#) treatment before the development of these new treatments ²⁾.

¹⁾

Pereira RB, Evdokimov NM, Lefranc F, Valentão P, Kornienko A, Pereira DM, Andrade PB, Gomes NGM. Marine-Derived Anticancer Agents: Clinical Benefits, Innovative Mechanisms, and New Targets. *Mar Drugs*. 2019 Jun 2;17(6):329. doi: 10.3390/md17060329. PMID: 31159480; PMCID: PMC6627313.

²⁾

Kaneko S, Kaneko S. Fluorescence-Guided Resection of Malignant Glioma with 5-ALA. *Int J Biomed Imaging*. 2016;2016:6135293. Epub 2016 Jun 27. PubMed PMID: 27429612.

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