

EDITORIAL

Marine biodiversity as source of new drugs

Life in the oceans has an extraordinary biodiversity, including most of plant and animal taxa. Ecological pressures, including competition for space, the fouling of the surface, predation, and successful reproduction have led to the evolution of secondary metabolites and proteins with various biological activities (Cammarata et al. 2011; Maisano et al. 2013). Therefore, marine biodiversity is an exceptional reservoir of natural products, with different structural features from those of terrestrial natural products (Ireland et al. 1988). Only less than 1% of the natural products isolated from marine organisms have been examined for pharmacological activities (Fusetani 2000). These molecules are important for their potential applications as medical drugs. The majority of bioactive (antibacterial, antifungal, antiviral, cytotoxic or antifouling) molecules have been isolated from benthic animals such as sponges, cnidarians, bryozoans, molluscs, polychaetes, echinoderms, and ascidians. These chemical compounds serve as a form of defense against predators, competitors, and invading microorganisms and parasites. The study of marine organisms for their bioactive potential has increased in recent years and now one-third of best-selling drugs are either natural products or have been developed based on lead structures provided by nature (Roch et al. 1996), and almost 60% of drugs approved for cancer treatment are of natural origin (Amador et al. 2003). About 15,000 pharmacologically active compounds have been isolated from marine species, many of which are structurally unique and absent in terrestrial organisms (Newman & Cragg 2004). Despite the benefits for human health provided by these bioactive molecules, marine biodiversity is impaired by a wide variety of human activities and environmental change, for example overfishing and the use of high-impact fishing (Astrauskas et al. 1998; Iannibelli & Musmarra 2008). Pollutants such as PCBs, PHA heavy metal and dioxins can affect benthic intertidal invertebrates and fishes (Ferrando et al. 2006) and climate change can produce negative effects on animal populations and threaten their survival (Lehtonen 1998; Fenoglio et al. 2010). Therefore, all actions undertaken to mitigate these negative effects on the marine environment will not only maintain marine biodiver-

sity – of which much remains to be discovered – at current levels, but, through research, new molecules can be found that are suitable for use in natural medicine.

The *Italian Journal of Zoology* solicits its potential contributors to publish original research articles, short communications, comments and reviews on the isolation and characterization of natural bio-active molecules from marine animals and their modes of action.

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