

Future 'Super Medicine' from the Ocean?

Oceans contain a diverse range of animals, of which, corals have been the subject of intense research for pharmaceuticals and super medicine. Human bacterial infections have become increasingly resistant to existing antibiotics; as a result, pharmaceutical companies are exploring the oceans in search for new cures for these and other diseases. Coral reef species offer particular promise because of the array of chemicals produced by many of these organisms for self-protection. Sunscreen has been developed based on natural biochemical protection



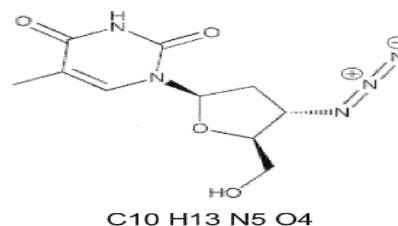
Corals lives in symbiotic relationships with coralline algae, the zooxanthellae
http://www.undersea.com.au/corals/coral_sex.htm

containing properties of corals which are able to withstand long-term exposure to ultra violet (UV) radiation. Coral reef species produce bioactive substances for their own defence against predators and competitors and the environment and pharmaceutical companies are targeting these substances to develop new drugs for human.

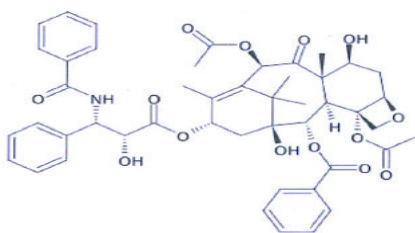


Corals are neither plants or rocks but marine animals
<http://www.tooprecioustowear.org/value/importance.html>

antifungal, antibacterial and anti-inflammatory properties. In short, coral reef organisms are a reservoir for biomedically important substances, and many other potentially important compounds and products. Chemicals from corals include AZT and Taxol, which are used for life saving HIV and cancer treatment respectively. Very recently (2007), Scientists from the James Cook University (School of Pharmacy & Molecular Sciences) have discovered some striking similarities between the genetic makeup of corals and humans. Corals though very simple animals have as many genes as human (20-25000 genes in corals compared to human 20-23,000) and many of the molecules in the nervous systems are similar to higher animals. These genetic matchings, according to scientists, could pave the way for exciting developments in medicine.



Chemical Azidothymidine (AZT) or Zidovudine from corals being used for life saving AIDS & HIV treatment



Taxol, a potent anticancer chemical isolated from corals. The chemical is potent against leukaemias, tumours in the breast, ovary, brain, and lung

Currently, one-half of all new cancer drug research focuses on marine organisms. Marine organisms are a rich source of antioxidants having the potential for development of a wide range of applications. Chemicals found in sponges, snails, and algae are used to treat pain, infections and inflammations. A particular type of blue green algae found in mangrove of the Caribbean is used as a treatment of small-cell lung cancer. Marine sponge (*Discoderma*) can help people with heart, kidney, and liver transplants. Shark cartilages are being used as traditional medicine to cure cancer. Horse shoe crab blood contains a unique blood clotting agent which pharmaceutical companies used to test intravenous drugs for bacteria.

Coral reefs have survived in the earth's oceans for over 450 million years, but they remain highly sensitive to rapid climatic changes and anthropogenic pressures. The biggest threats to coral health are global warming, and a corresponding rise in sea levels and sea temperatures; sedimentation and pollution; overfishing and unsustainable and destructive extraction techniques. Sixty six species of corals have been identified from the 'Coral Island' of Banglaesh (located near Teknaf), where ecotourism is being promoted, however, the biodiversity and the fragile ecosystems of the 'Coral Island' needs some protection which could be a source of a future 'super medicine' reserve for Banglaesh.

References and further reading

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