

Novel chemicals isolated from the marine environment with potential activity against Oesophageal Cancer

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Oesophageal cancer is among the most common causes of cancer related deaths among black South African males. The high mortality associated with this disease is due to the late diagnosis resulting in a large tumour mass at the time of detection. There is thus a need for highly effective drugs to rapidly reduce the tumour load, and also to combat the acquisition of resistance by tumours.

Our group, in collaboration with chemists from Rhodes University, and marine zoologists and botanists from around the country, focuses on the identification of novel chemicals from marine organisms that may be useful in the treatment of oesophageal cancer.

This project has involved the development of a cheap, relatively rapid screening program which, while ongoing, has already yielded several interesting active compounds. Among these are a group of quinine/hydroquinone structures, which display differential activity against oesophageal cancer cell lines relative to other cancer cell lines. The most active of these compounds kills the cancer cells in a time and dose dependent manner. Morphological observations suggest that the method of killing may involve induction of apoptosis. Further investigations clearly indicate the activation of caspase 3, and the disruption of normal cell cycling. Preliminary results indicate that reactive oxygen species may mediate the cytotoxic effect of one of the hydroquinone compounds.