

# Evaluation of anticancer activity of leaves of *Rumex vesicarius* Linn and *Symplocos racemosa* Roxb. by brine shrimp lethality and (3-(4,5-dimethylthiazol-2-yl)-2,5-diphenyltetrazolium bromide) methods

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## Abstract

**Introduction:** The objective of the present study was to evaluate the anticancer activity of leaves of *Rumex vesicarius* Linn and *Symplocos racemosa* Roxb. **Materials and Methods:** In this study, cytotoxicity was assayed by brine shrimp lethality bioassay (BSL) and (3-(4,5-dimethylthiazol-2-yl)-2,5-diphenyltetrazolium bromide) assay. **Result:** Different extracts of leaves of plant *R. vesicarius* Linn. and *S. racemosa* Roxb were found to be cytotoxic to HT-29 and PC-3 cell lines. Different extracts of leaves of plant *R. vesicarius* Linn. and *S. racemosa* Roxb showed significant ( $P < 0.0001$ ) cytotoxic effect on HT-29 and PC-3 cell lines in a dose-dependent manner. It also showed significant cytotoxic effect in BSL bioassay. **Conclusion:** The study demonstrated that all the extracts of *R. vesicarius* Linn and *S. racemosa* Roxb show a significant cytotoxic effect on HT-29 and PC-3 cell lines as well as on BSL bioassay in a dose-dependent manner.

**Key words:** 3-(4,5-dimethylthiazol-2-yl)-2,5-diphenyltetrazolium bromide assay, brine shrimp lethality bioassay, *Rumex vesicarius* Linn, *Symplocos racemosa* Roxb

## INTRODUCTION

Cancer is considered one of the most common causes of morbidity and mortality worldwide. The target of much research has been on the discovery of natural and synthetic compounds that can be used in the prevention and/or treatment of cancer. The natural product of either plant or animal origin that exhibited antitumor activity has been discovered.<sup>[1]</sup>

Plants have been a prime source of highly effective conventional drugs for the treatment of various forms of cancer. *Podophyllum peltatum* and *Podophyllum hexandrum* are used in the treatment of Hodgkin's disease, non-Hodgkin's lymphoma, leukemia, bronchogenic carcinoma, and cancers of the ovary and the testis.<sup>[2]</sup> Ginger consists of a phenolic compound whose rhizome is used traditionally for its cytotoxic activity through apoptosis in cancer cells.<sup>[3]</sup> *Curcuma xanthorrhiza* Roxb consists of xanthorrhizol which is a sesquiterpenoid complex derived from rhizome, which inhibits

the formation and development of tumors.<sup>[4]</sup> *Curcuma longa* which consists of curcumin inhibits the growth of cancer cells by preventing the production of harmful eicosanoid. It is used to treat squamous cell carcinoma of the skin and the ulcerating oral cancer.<sup>[5,6]</sup> *Ocimum sanctum* inhibits the growth of various cancer cells, particularly breast cancer, and minimizes the side effects of chemotherapy.<sup>[7]</sup> *Echinacea angustifolia* is used to treat metastatic carcinoma of the esophagus and the colon.<sup>[8]</sup> *Aloe vera* contains aloemodin, which activates the macrophages to fight cancer.<sup>[9]</sup> *Chlorella pyrenoidosa* contains a very effective detoxifying agent that protects the body from cancer.<sup>[10]</sup> *Nigella sativa* kills cancer cells by binding to asialofetuin (lectin) on the

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