

**UNIVERSITI TEKNOLOGI MARA**

**EVALUATION OF *PLANTAGO LANCEOLATA*  
AGAINST BRINE SHRIMP LETHALITY TEST**

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## ABSTRACT

*Plantago lanceolata*, belonging to the family of plantaginaceae, has been known to be used as a traditional medicine in the treatment of cancer by some locals in Mauritius. In the present study, extracts of this medicinal plant was screened for their cytotoxicity using brine shrimp lethality test since it is a simple, reliable and convenient method for assessment of bioactivity. The root and leaf were separated and investigated for their activity. The extract was prepared by dissolving the air-dried leaves and roots of *P. lanceolata* in 80% Methanol for 72 hours and subsequently partitioned in hexane and chloroform. The leaf extracts showed significant toxicity with minimum LC<sub>50</sub> of 379 ( $\pm$  30)  $\mu\text{g/mL}$ , whereas the root extracts were relatively inactive with LC<sub>50</sub> of more than 1000  $\mu\text{g/mL}$ .

# CHAPTER 1

## INTRODUCTION

### 1.1 Background

Natural products offer a valuable source of compounds with a wide variety of biological activities and chemical structures provide important prototypes for the development of novel drugs (Cassady *et al.* 1981). This is also true for anticancer agents, most of which has been derived from natural sources, as pure, native compounds or semi-synthetic analogues. Some anticancer drugs from natural origin are listed in table 1.1. Chemical structures of selected drugs representing several different mechanisms and compound classes are listed in figure 1.1.

Anti-cancer drugs from natural origin, and their semi-synthetic analogues, exert their effects on the cancer cells with distinct and definable mechanisms. For example, the topoisomerase inhibitors, of which podophyllotoxin, topotecan and etoposide are examples, interfere with transcription, DNA synthesis and mitosis by blocking the enzymes DNA topoisomerase I and II. While vinca alkaloids and taxanes, example vincristine and paclitaxel, block the polymerization and depolymerization, respectively, of microtubule, thereby interfering with key steps in cell division, such as organization of mitotic spindle and hence the mitotic arrangement of the chromosomes.