CHAPTER I
INTRODUCTION

Today, nutrition is less focused on preventing deficiency diseases and more on enhancing immunity and preventing chronic disease; this has caused an increase interest in functional foods in order to improve human health (Brown, 2000). The role of dietary factors in the prevention of major chronic diseases, cancer in particular, is under intensive investigation by many scientists around the world. Evidences from epidemiological studies and tests in laboratory animals suggested that many kinds of food may play roles in reduction the risk of cancer (Stavric, 1994).

Free radical production is highly linked to cancer initiation (Blessington, 2005). Fruit and vegetables are good sources of natural antioxidants such as vitamins, carotenoids, flavonoids and other phenolic compounds (Minussi *et al*., 2003; Zhang & Hamauzu, 2004). Vegetables such as eggplant, pepper and tomato of the *Solanaceae* family have high phenolic content and specifically eggplants are a rich source of phenolic phytochemicals having high free radical scavenging-linked antioxidant activity (Luthria and Mukhopadhyay, 2006).

Thai people consume both raw and processed eggplants. They are *Solanum aculeatissimum* Jacq. and *Solanum melongena* L. Eggplants contain ascorbic acid and phenolic compounds, both of which are powerful antioxidants (Vinson *et al*., 1998). Studies showed that eggplant extracts suppressed the development of blood vessels required for tumor growth and metastasis (Matsubara *et al*., 2005). Lee *et al*. (2004) demonstrated that solamargine and solasonine extracted from *Solanum melongena* L. were toxic to human colon cancer cell line (HT 29) and human liver cancer cell line (Hep G2). In addition, phytosterols of *Solanum aculeatissimum* Jacq. could inhibit tumor growth and metastasis in MDA-MB-231 human breast cancer cell (Awad *et al*., 2010a) and PC-3 human prostate cancer in SCID mice (Awad *et al*., 2001b). However, there was no study on the antimutagenicity of processed eggplants against any standard mutagens. Therefore, this study was aimed to investigate the antimutagenicity

against urethane induced somatic mutation and recombination in *Drosophila melanogaster* of *Solanum aculeatissimum* Jacq. (Cockroach berry and Yellow Berried Nightshade) and *Solanum melongena* L. (Aubergine) that were raw, steamed or fried. The total phenolic content and antioxidant activities were also determined.