



CHAPTER I

INTRODUCTION

Several studies indicated that diet was one of the important factors to cause cancer. Dietary factors suspected of increasing cancer risk include food rich in nitrite or nitrate, high-salt diets, smoked fish, broiled meat and low intakes of fresh fruit and vegetables. In addition the *in vivo* interaction between some food or drugs and some chemicals produced mutagen were demonstrated. For example, Thamavit *et al* (1988) showed that the combined administration of 0.1% nitrite and 0.1% aminopyrene in the drinking water for eight to ten weeks to Syrian golden hamster resulted in subsequent development of both hepatocellular nodules and cholangiofibrotic lesion/carcinomas. The mixture of bile acids, aspirin, alcohol, and nitrite could increase neoplasia of gastric mucosa (Newberne *et al.*, 1987). Some tranquilizers reacted with nitrite in food and produced some carcinogenic nitroso compounds (Takeda and Kanaya, 1981).

There have been considerable changes in life-style and environment, of which diet is one, during the present century, and these may well be associated with the increase incidence of cancer (Bender and Bender, 1982). The developments of food technology or food preservation introduce many chemicals that might affect to human health. Several studies showed some possible harmful effects due to the consumption of food additives with some drugs

In addition there were several studies which were useful for us in prevention of cancer. They suggested that some food had properties of cancer prevention, such as biological antioxidants : carotenoids, retinoids, ascorbic acid, α -tocopherol, especially β -carotene that was suggested that could prevent chemically induced toxicity (Kornhauser *et al.*, 1994) and could inhibit and decrease cancer occurrence (Alok *et al.*, 1994).

Moreover, plant fiber, defined as the total indigestible fraction of foodstuff, includes mainly unavailable polysaccharide and lignin, and these are now believed to be important food components with a variety of beneficial effects including a possible protection against cancer (Rydning *et al.*, 1982; Risch *et al.*, 1985). Several studies in laboratory animal models demonstrated that dietary fiber inhibit chemically induced carcinogenesis (Lucien, 1986, Moller et al, 1988, Joanne, 1990, Regina, 1991).

Therefore, it is of great interest to study the mutagenic potential of some drugs, (such as chlordiazepoxide, bromazepam), treated with nitrite (food additive) in acidic condition on Ames test. Furthermore, the prevention of mutagen from drug-nitrite by some fibers and proteins, was studied. The results of this study provided some information regarding the risk of consumption of some foods together with some drugs.

Experiment objectives

Since the food habits of Thai people in rural area have changed to Western style. The consumption of dietary nitrite during the chronic administration of some drugs may be unavoidable because some fermented meat products are widely accepted. Since it is known that some of the interactive products are mutagens, therefore, it was of great interest to study the mutagenicity of some drugs currently used for chronic therapeutic purpose among Thai people. The counteraction of the mutagen formation using a simple constituent of Thai food namely fiber isolated from ivy gourd was investigated as well as the possible prevention of a simple protein namely bovine serum albumin was also investigated.