CHAPTER 1

INTRODUCTION

Stress is the disturbed homeostatic condition of the organism, and it is represented by non-specific response of the body to any demand imposed on it [1]. Stress is the part of life, which co-exist and integrated with organism. Even in most of the circumstances stress has to suffer by the organism at the cost of potential damage.

Stress brings various changes in physiological condition of the organism, but various mechanism of the body will counteract to maintain homeostasis. In some situations, body’s adaptation to stress is like reward, which is responsible for improvement of body’s performance beyond its capacity. However if organism suffer strong acute or chronic stress, body is unable to maintain homeostasis. Under this condition, various types of diseases and disorders will develop, and even it may lead to death, if it is not managed at proper time. When the organism is exposed to cold condition of environment, it leads to stress resulting in damage to the body [2].

Children of poor socioeconomic community will suffer from higher circumstances of stress, compared to children of developed community. Prolonged period of stress can impair normal working and development of brain, and this ultimate result in malfunction of central nervous system [3]. In United States of America, many persons are suffering from depression, and it may be due to emotional stress caused by lack of social and cultural aspects of life.

Various diseases and disorders caused by stress are hyperglycemia, elevated blood pressure, gastric ulcers, chronic stress induced depression and suppression of immunity [4]. Environmental stress brings down immunity of organism, which is indicated by rise of stress markers [5].

As human beings want to maintain health, management of stress will be the priority of life. Stress can be managed by various techniques and treatments, such as physical or mental training, use of medicine etc. Physical training is the conditioning of the body to the noxious stressful stimuli, and its techniques are regular exercise, yoga, deep breathing exercises etc. Whereas mental training is the conditioning of the mind to the emotions as well as other type of stress by practicing meditations.

Treatment of stress includes use of medicine from different traditional as well as modern system. Traditional systems of medicine are: Ayurveda, Siddha medicine, herbal treatment, Unani, and the homoeopathy. The modern systems of treatment
include use of allopathic drugs with or without surgery. In allopathic treatment of stress, some drugs like benzodiazepines can be used to control stress, but due to their side effects and toxicity, their use is limited. Particularly they are not useful for chronic stress treatment, because they may produce tolerance and dependence on long term use [6]. In search of medicines that are devoid of toxicity, Hippocrates, the father of medicine said, “Let food be thy medicine and medicine be the food.”

Recently, tremendous focus is on the eco-friendly and bio friendly natural products, so that they can be useful for maintenance of health with less toxicity. Such type of natural herbal products are being formulated and marketed in India and western countries by various herbal companies like Herbalife, Natural remedies, Himalaya Drugs etc. Many nations are using general tonic to boost immunity and combat infections. These tonics are the supplement or first-line of remedy to improve poor health. One such type of immune booster is Echinacea (purple cone flower). In India herbal formulations like Dabur chawanprash and Baidyanath Chawanprash are used as immune boosters. Natural products are widely used in India and worldwide due to their least side effect on long term use. If scientifically investigated and validated, these natural products can be locally grown cheaply, and will be useful for the maintenance of health in economically backward countries. Today, the human beings have reached other planets in search of knowledge and treasures of creation. But our earth planet itself is enriched with botanical wealth. We have utilized these rich sources in one form or another for the betterment of life, since ancient civilization period.

As per yajurveda, the concept of Ayurveda is to enhance life and to have a healthy lifespan. Rasayanas were widely used as part of Ayurvedic system of treatment in our country, since 6000 BC. The concept of Rasayanas was to improve health, to counteract diseases and prolong lifespan [7]. In Malaysia, health promoting substances were known by Jamu, since olden days. In China they were well known by Zi bu (tonic) or Hui Fu (restorative) and in USSR by toniziruyuzhie sredstva (tonic). Purpose of all these preparations is to make healthy and youthful condition of a person [8].

Herbal drugs utilization can be traced 5000 years back, and its ample proof were found in medical literature of different civilization [9]. As per World Health Organization (WHO), herbal treatment is the therapeutic practice existing since centuries [10]. The present modern synthetic medicine is gradually developed by
researchers just few decades back. To avoid undesirable side effects and toxicity of these synthetic drugs, people still use herbal drugs. About 1.42 billion of population is consuming a traditional medicine, which contributes to global economy to a great extent [11].

In rural and interior areas of our country, people are dependent on various plant parts for treatment of disease and disorders. Primary health care’s facilities are not reachable. Specialists of medicine in the village are vaidh or hakim, who prepares medicine by extracting active constituents from different parts of plants and then compound as per requirement of disease. *Rauwolfia serpentina* root contains active constituent like serpentine, which can be isolated and used in the treatment of elevated blood pressure. Vincristine and Vinblastine are the active constituents of Vinca plant, which are used in the treatment of cancer. *Podophyllum* is another plant, used in the treatment of cancer.

**1.1 Need for the Study**

Hazardous stressful situation can be managed by using antistress agent or adaptogen. Adaptogens are food supplements or medicinal plants acting as antistress agents by improving resistance and tolerance of the body to any stress situation [12]. Adaptogen or antistress agents improve physical and mental working capacity in severe stress circumstances, and improve tolerance of the body to extreme conditions of environment and climate. Adaptogens are like general tonic which enhance health and wellbeing of human body by providing strength and immunity to the body, arresting ageing etc [7].

The word adaptogen was postulated by a French Pharmacologist Lazarev in 1947. Later the concept of adaptogen was developed in USSR, during early 1960s. Scientist of USSR explored and conducted studies on Siberian folklore medicine. During early 1990s, Japan and Germany also conducted studies on stress and adaptogens. As a result of these studies *Panax ginseng* got special importance in adaptogen field. The first synthetic adaptogen was dibazol (2-benzylbenzimidazol) that has shown antistress activity [13]. Various medicinal plants have shown antistress activity such as *Ashwagandha*, *Ginseng*, and *Tulsi*. Polyherbal formulations like Geriforte have been developed for antistress action. But still the need of effective antistress agents to combat noxious stressful situations of life is high.

This prompted to carry research on *Vitis vinifera* and *Cichorium intybus*, and to prove it scientifically for their use as antistress agent.