1. Introduction

Adaptation is one of the basic phenomena of biology and it is an evolutionary process whereby an organism becomes better able to live in its habitat or environments. Adaptation affects all aspects of the life of an organism [1]. Adaptation as a fact of life has been accepted by all the great thinkers who have tackled the world of living organisms. The brain and the immune system are the two major adaptive systems of the body. During an immune response and stress conditions, the brain and the immune system co-ordinate to each other and this process is essential for maintaining homeostasis and adaptation [2].

1.1 Adaptogens

Adaptogens are the unique natural substances which enhance the nonspecific resistance of organisms against different types of stressors. They work at the cellular level to help normalize the body's various functions and stimulate the recovery processes needed to adapt all types of stress in our lives. Adaptogens boost the power of resistance against several stressors and prevent sickness and keep us healthy. Adaptogenic plants are so powerful that they can change the course of the disease when added with some other herbs and chemical. They increase tolerance to change in environmental conditions and resistance to noxious stimuli such as exposure to cold, heat, pain, general stress and infectious organisms. Such agents have been claimed to arrest ageing process and age induced deterioration in physical and mental performance. In strenuous conditions, the physical performance of an organism is dependent on the availability of appropriate macro and micronutrients required in excess on account of their increased utilization during stressful situations [3].
The concept of an adaptogen is a relatively new way of describing a type of remedy commonly found in traditional Chinese (Qi tonic), African (Manyasi), Tibetan and Ayurvedic (Rasayana) system of medicine. Adaptogens were classified by the ancient Chinese as the most effective plants to increase physical and mental capacity, reduce fatigue, improve resistance to diseases, and extend lifespan. People discovered that using adaptogens is vital during times of challenges. In China, adaptogens were used by soldiers’ right before battle. In Siberia, the adaptogenic plants were used by hunters before long and dangerous journeys. The Tibetan monks were able to get by without food and warm clothes, living high in the mountains for many days using these plants. The actual word adaptogen was first used by a Soviet scientist, Dr. Nikolai Lazarev, who under grants from the military was researching substances which produce a state of nonspecific resistance (SNIR) [4].

Scientific studies have shown that human and other organisms are able to adapt better and survive longer when using these adaptogenic plants. Much of the early research on adaptogens was done by Dr. Israel Brekhman who, in the late 1950’s, studied Panax ginseng. In 1969, Israel Brekhman and his colleague IV Dardymov established the pharmaco-dynamic characteristics of an adaptogenic substance. According to him, an adaptogen is almost non-toxic to the recipient. It must be innocuous, having non-specific pharmacological action and acting by increasing the resistance of the organism to a broad spectrum of adverse biological, chemical and physical factors. Adaptogens tend to be a regulator having a normalizing effect on the various organ systems of the recipient organism [3].

1.2 Scope and importance of present work
It is very difficult to look nice and handsome for longer time because modern life style has enhanced the exposure of human beings to stressful conditions resulting physical, emotional and behavioral manifestations. Everybody wants to maintain his body charming and powerful life to rejuvenate himself to look smart. On entering into 21 century, we are susceptible to such a susceptible environment that it has almost become impossible for our natural immune system to give us the fair share of protection from the environmental hazards. Therefore, there is need to enhance adaptability of human being to that stressful conditions. Few synthetic drugs are available but due to the high cost, side effects and reappearance of symptoms after discontinuation associated with them, the researchers are looking for drugs from the natural sources.

Natural product resources provide excellent raw materials for the discovery and development of novel oxidative stress defence and anti-ageing adaptogenic compounds [5]. It can be difficult to determine which active ingredients in plants diffuse an effect as adaptogens. According to adaptogen researcher Phenolics, flavonoid and acidic glycosides like compounds in fruits, triterpenoid saponins, phytosterols and vitamins have been reported to exhibit a wide range of biological activities and these effect are mainly attributed to their adaptogenic anti-oxidant properties [6].

**Carissa carandas** L. (Apocynaceae), an important plant bearing minor fruit is commonly known as Karonda (Christ’s thorn) and has been cultivated in a limited way in the tropical, subtropical and mediterranean region. The sour unripe fruit is reputed for its aphrodisiac, appetizer, antipyretic and astringent properties and is used in the treatment of diarrhoea and intermittent fever [7].

**Spondias mangifera** Willd. (Anacardiaceae) is a glabrous tree with a characteristic pleasant smell of fruits, commonly known as Hog plum or Bile.
tree which is widely distributed on tropical and subtropical beaches and abundantly in the eastern and in north-east regions of India. The fruit is aromatic, astringent, refrigerant traditionally used to give tone and treatment of rheumatic articular and muscular pain [8].

*Solanum torvum* SW. (Solanaceae) is a small shrub native from Mexico to Peru and Venezuela, and in West Indies and Bermuda distributed widely in Thailand, India, and Indonesia except the western desert area, Malaya, China, Philippines and tropical America. The fruit has been used ethnomedicinally as a tonic and haematopoietic, anti-microbial agent and for the treatment of pain. A decoction of fruits is given for cough ailments and is considered useful in cases of liver and spleen enlargement, diuretic and digestive [9].

On the basis of literature survey, it was found that all these three selected plants are traditionally important used in culinary preparations and rich source of terpenoids, steroids, saponins, acids, phenolic and flavonoid compounds, vitamins and minerals. These fruits are reported to possess antioxidant, analgesic, anti-inflammatory astringent, refrigerant, tonic and mast cells stabilizing activity. No scientific claim has been made on pharmacognostical studies, adaptogenic and antioxidant activities on the fruits of these three plants. Hence, the present investigation was undertaken for standardization, isolation, characterization and screening for adaptogenic and antioxidants activities.
References


