Introduction

Aloe is a succulent plant widely used in alternative medicine. There are at least 420 different plant species of Aloe. Aloe vera specifically refers to the Aloe barbadensis Miller plant, which is the most common form used in Aloe-based products. Thousands of years, plants have been used as an important source of medicine in pharmaceutical biology. As per WHO estimates, even today, up to 80 percent of population still rely on traditional medicines. The genus Aloe is a perennial, succulent xerophyte grown in temperate and sub-tropical parts of the world. It has originated from Africa. Aloe vera or Aloe barbadensis belongs to the Asphodelaceae family, of which there are over 360 known species. There have been several species under the genus Aloe, including Aloe vera, Aloe barbadensis, Aloe ferox, Aloe chinensis, Aloe indica, Aloe peyrii etc. Amongst these, Aloe vera Linn syn. Alobarbadensis Miller is accepted unanimously as the correct botanical source of Aloe. It is commonly called aloe, burn plant, lily of the desert and elephant’s gall. It is a cactus-like plant with green, dagger-shaped leaves that are fleshy, tapering, spiny, margined and filled with a clear viscous gel. It is a stemless or very short-stemmed plant growing to 80-100 cm tall, spreading by offsets and root sprouts. The leaves are thick and fleshy due to water storage tissue in the leaves to survive in dry areas of low rainfall. Leaves are green to grey-green, with a serrated margin. The flowers are produced on a spike up to 90 cm tall, each flower pendulous, with a yellow tubular corolla 2-3 cm long. Aloe vera is cultivated in large quantities because of its high demand in industrial, cosmetics and pharmaceutical sector. The pharmacological actions of Aloe vera include anti-inflammatory and anti-arthritic activity and antibacterial and hypoglycaemic effects. It is called the healing plant or the silent healer, because of its wound and burn healing properties. Aloe vera has been used for medicinal purposes in several
countries for millennia, such as Greece, Egypt, India, Mexico, Japan, and China. Aloe leaf consists of two parts, each of which produces different substances that have completely different composition and therapeutic properties. The inner parenchymal tissues form a clear, thin, tasteless, jelly-like material. The outer pericyclic tubules, occurring just beneath the outer green rind or cutinized epidermis of the leaves, produce a bitter yellow exudates. The inner mucilaginous pulp called Aloe gel, lies in the centre of leaf. The Aloe gel consists of 96% water while the remaining 4% contains 75 known substances including vitamins A, B, C, E, calcium, amino acids and enzymes. AV contains over 200 biologically active, naturally-occurring constituents including polysaccharides, vitamins, enzymes, amino acids, and minerals that promote nutrient absorption, digestive health, a healthy immune system, and a reduction of nitrates. There are over 250 species of aloe grown around the world. However, only two species are grown today commercially, with Aloe barbadensis Miller and Aloe aborescens being the most popular. Today, the Aloe industry has established high ethical standards for businesses and their Aloe products. Aloe is full of promise for those willing to make the necessary effort.

**Functions** Aloe is one of the leading products used in phytomedicine. As recently as this century, published studies show its use in numerous biologic and therapeutic functions:

**Wound healing** AV improved the biochemical, morphological, and biomechanical characteristics of the healing cutaneous wounds by modulating the inflammation, increased wound contraction and epithelialization, decreased scar tissue size, and increased alignment and organization of the regenerated scar tissue. AV, either alone or in combination with routine treatment (such as external application of hirudoid, sulphonic acid mucopolysaccharide and dexamethasone), was more
effective than routine treatment alone for improving the symptoms of phlebitis including shortening the time of elimination of red swelling symptoms, time of pain relief at the location of the infusion vein and time of resolution of phlebitis.

**Antioxidant/ anti-inflammatory/ antifungal/ hypolipidemic activity**

The *in vitro* antioxidant activity of the polysaccharides from AV (Aloe barbadensis Miller) gel was evaluated, by five established methods, 1,1-diphenyl-2-picrylhydrazyl (DPPH(-)) radical scavenging, nitric oxide (NO) scavenging, hydrogen peroxide scavenging, superoxide radical (O2.-) scavenging and reducing power assay, and *in vivo* against doxorubicin (DOX)-induced myocardial oxidative stress (OS) [17]. AV showed antioxidant effect on the chosen antioxidant parameters copper-zinc superoxide dismutase (Cu-Zn-SOD), malondialdehyde (MDA), and nitric oxide (NO). Appropriate levels of NO are protective against inflammatory damage, however, sustained levels result in tissue toxicity. AV gel extract decreased the NO levels. AV decreased interleukins (IL-1β, IL-6) and prostaglandin E2 (PGE2) in peritonitis, showing good anti-inflammatory effect [5].

The AV leaf gel contains biologically active compounds like mannose-6-phosphate, carboxypeptidase, glutathione peroxidase, and superoxide dismutase. These compounds have been claimed to have anti-inflammatory, antioxidant, immunostimulatory, antibacterial, hypolipidemic, wound healing activity and hypoglycemic properties.