



## Original research

## Secondary metabolite credentials and *in vitro* free radical scavenging activity of *Alpinia calcarata*

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### Abstract

**Introduction:** *Alpinia calcarata* represent one of the most commonly used plant in traditional systems of Indian medicines.

**Objective:** To study the phytochemical and *in vitro* free radical scavenging activity of rhizome of *A. calcarata*.

**Methods:** Phytochemical evaluation of the rhizome of *A. calcarata* was carried out with successive solvent extraction. The *in vitro* free radical scavenging activities were also studied in ethanolic extract using standard protocols.

**Results:** It was found that most of the secondary metabolites like flavonoid, steroid, terpenoid etc were found in ethanolic extract of *A. calcarata* when compared with other solvent extraction. It also shows better inhibition potential in various *in vitro* scavenging models when compared to the standard.

**Conclusion:** Hence the present study reveals that the rhizome of *A. calcarata* might be used as herbal drug.

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**Keywords:** *alpinia calcarata*; phytochemical; free radical; herbal drugs

### 1. Introduction

Medicinal plants have always been associated with cultural behavior and traditional knowledge. Many studies have demonstrated that medicinal plants contain various bioactive compounds with antioxidant activity, which are responsible for their beneficial health effects.<sup>1</sup> Herbal medicine is the major stay of about 75–80% of the world population, mainly in the developing countries, for primary health care due to a better cultural acceptability, better compatibility with human body and few side effects. Phytonutrients have various health benefits, for example, they may have antimicrobial, anti-inflammatory, cancer preventive, anti-diabetic and anti-hypertensive effects.

The photochemical constituent of a plant will often determine the physiological action on the human body.<sup>2</sup> Medicinal plants contain several active principles with specific therapeutic effects. They represent a source of chemical compounds such as tannins, flavonoids, saponins, resins and alkaloids with curative properties, often not provided by synthetic chemical compounds.<sup>3</sup>

Oxygen free radicals are formed in tissue cells by various endogenous and exogenous causes such as metabolism, chemicals, and ionizing radiation. Approximately 5% of oxygen gets univalently reduced to oxygen derived free radicals like superoxide, hydrogen peroxide, hydroxyl and nitric oxide radicals. All these radicals are known as reactive oxygen species (ROS) exert oxidative stress to the cells. When the generation of ROS overtakes the antioxidant defence of the cells, the free radicals start attacking cellular proteins, lipids and carbohydrates leading to the pathogenesis of many disorders.<sup>4</sup>

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