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Investigating potent cardioprotective compounds as ACE inhibitors in *Saraca asoca*

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ABSTRACT

Saraca asoca is a traditional medicinal plant whose all plant parts are exceptionally effective in terms of antimicrobial, anti-inflammatory, antioxidant, anti-carcinogenic, free radical scavenging, anti-arthritic, and hypolipidemic properties. As cardio-vascular problems occur for many reasons, antioxidants with free radical scavenging properties of plants and herbs are highly effective in treating cardio-related disorders. Though Saraca asoca has been preferred as a tonic and medicinal supplement for women's health, because of the huge variety of bioactive compounds, Saraca asoca needs to be explored for its cardio-protective properties. This review aims to summarize the in vivo and in vitro studies done on Saraca asoca along with the exploration of bioactive compounds in various parts of the plant which will display its cardio-protective potential with its rich bioactive compounds as ACE inhibitors. All relevant information on Saraca asoca in treating and preventing cardio-related disorders has been collected from electronic databases including PubMed, Google Scholar, Web of Science, and Science Direct. Various parts of Saraca asoca were studied to assess its pharmacological and cardioprotective properties. The bioactive compounds of Saraca asoca have been assessed to explore its role as anti-hypertensive, antioxidant, ACE inhibitors, and cardio-protective with the help of in-vivo, in-vitro studies and other research studies. This thorough review focuses on the potent natural bioactive compounds in various parts of Saraca asoca exhibiting its potential as a cardioprotective agent while incorporating historical, chemical, and therapeutic views.

1. Introduction

Cardiovascular disease (CVD) remains one of the major public health problems responsible for morbidity, mortality, and many deaths worldwide [1]. Many factors in accelerate the risk of cardiovascular diseases are hypertension, physical inactivity, stress, smoking, faulty food habits, improper lifestyle, environmental pollutants, toxic heavy metals, reactive oxygen species, etc. Apart from aggravating other serious cardiovascular problems such as atherosclerosis, coronary artery disease, and stroke, hypertension plays a key role in damaging the kidneys well [2]. As per many reports and research studies, reactive oxygen species and free radicals such as superoxide anion, hydroxyl radical, and hydrogen peroxide, are the prominent cause of increasing the risk of hypertension [3]. So, to mitigate the risk of cardiovascular diseases, it is suggested by doctors, scientists, and nutritionists to increase the intake of strong antioxidants and essential nutrients by consuming herbs and herbal-related products in the daily diet regularly. As many plants and herbs contain essential nutrients along with natural bioactive compounds, their increased consumption is strongly recommended due to their free radical scavenging, anti-inflammatory, anti-oxidant, and other medicinal properties in protecting the body against the toxic effects of free radicals and reactive oxygen species. Apart from this, plants and herbs have also the ability to act as heavy metal chelators proving them to be effective hyperaccumulators [4]. Thus, the prime focus in treating and preventing cardiovascular-related problems could be the use of natural bioactive compounds extracted from herbs and plants acting as cardioprotective agents.

In this context, among many herbal plants, *Saraca asoca*, one of the traditional plants used as a medicine in Ayurveda needs to be explored for its effective cardio-protective properties. It is one of the oldest and sacred trees in Indian religion. It is found almost all over the country but it is mainly predominantly present in the northern areas of the country along with Eastern Bengal, South India, Aracan, and Tenasserium. All parts of the Saraca asoca plant are highly effective from the health

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