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Phytochemical screening of *Holarrhena antidysenterica*

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Abstract

Plants have been the basis of many traditional medicines through the world for thousands of years and continue to provide new remedies to mankind. Plant is one of the richest source of bioactive compound. *Holarrhena antidysenterica* is a twining shrub belong to family, Apocynaceae its commonly known as kurchi in Hindi and 'Conessi' or 'Tellicherry bark' in English is a rasayan herb used in Indian system of medicine. The conessi tree is popular for its numerous medicinal properties and the seeds and bark of this tree have long been used in Ayurveda. The plant has been employed for long time in folklore therapy. Bark of *Holarrhena antidysenterica* is used in Ayurveda as an anti-microbial, anti-inflammatory and analgesic (Jones, 1996, Cowan 1999, Krishnaraju *et al.*, 2005). 'Kurchi' bark is an important traditional drug used in various ailments. The drug is astringent, anthelmintic, stomachic, antipyretic, tonic and is generally administered as an extract or decoction in amoebic dysentery and diarrhea. Bark is given either alone or with other astringent drugs in piles, colic, dyspepsia, chest infections and diuretics; also reported to be useful in skin diseases and spleen disorder. In this study aqueous extracts of the bark of *Holarrhena antidysenterica* were subjected to preliminary phytochemical screening which showed the presence of saponins, carbohydrates. Aqueous extracts of this tested plant contain medicinally important bioactive compound and it justified their use in the traditional medicines for the treatment of different disease. The main aim of the proposed study is to investigate the phytochemical screening of medicinal plant.

Keywords: *Holarrhena antidysenterica*, phytochemical screening

1. Introduction

The importance of plants is well known to all. The plant kingdom is a treasure house of potential drugs and in the recent years there has been an increasing awareness about the importance of medicinal plants. Drugs from the plants are easily available, less expensive, safe, and efficient and rarely have side effects [1]. The plants which have been selected for medicinal use over thousands of years constitute the most obvious choice of examining the current search for therapeutically effective new drugs. According to World Health Organization (WHO), medicinal plants would be the best source to obtain variety of drugs. About 80% of individuals from developed countries use traditional medicines, which has compounds derived from medicinal plants. However, such plants should be investigated to better understand their properties, safety, and efficiency [2].

Medicinal plants contain some organic compounds which provide definite physiological action on the human body and these bioactive substances include saponins, carbohydrates, alkaloids, carbohydrates, tannins, phenolics, steroids, protein and amino acids [3]. They are widely used in the human therapy, veterinary, agriculture, scientific research and countless other areas [4]. A large number of phytochemicals belonging to several chemical classes have been shown to have inhibitory effects on all types of microorganisms in vitro. Clinically it is used in many exciting antibiotics [5].

Plant products have been part of phytomedicines since time immemorial. This can be derived from barks, leaves, flowers, roots, fruits, seeds. Knowledge of the chemical constituents of plants is desirable because such information will be valuable for synthesis of complex chemical substances [6]. In the present work, qualitative phytochemical analysis was carried out in *Holarrhena antidysenterica*.

2. Material and Methods

2.1 Medicinal plant: *Holarrhena antidysenterica* material were procured from commercial vendor in Akola district, Maharashtra and were authenticated by Botany department of Shri Shivaji College, Akola. The plant material was dried in shade then grinded and the herbal powder was ready to use.

2.2 Preparation of aqueous extract

Holarrhena antidysenterica root powder was also subjected to aqueous extraction. About 10g of *Holarrhena antidysenterica* root powder was immersed in aqueous solution in a 100 ml flat bottom flask and was cold extracted for 7 days with occasional shaking and warming. At the end of the seventh day, the clear filtrate was obtained by filtering through a Buchner funnel. The filtrate was further concentrated by vacuum distillation, cooled, transferred into a petri dish and dried in an oven at 60°C for a period of five minutes. Finally, the aqueous extract was kept in a desiccator for 15 days to remove the excessive moisture and was used for further studies [7].

2.3 Qualitative phytochemical analysis

The aqueous extracts of *Holarrhena antidysenterica* was subjected to different chemical tests for the detection of phytoconstituents such as carbohydrates, alkaloids, proteins, amino acids, tannins, phenolics, saponins, steroids.

2.4 Tests for carbohydrates

The carbohydrates were tested by using Benedict's test, Fehling's test, Molisch test and Barfoed's test.

2.5 Tests for alkaloids

The alkaloids have been tested by using Dragendroff's test, Wagner's test, Mayer's test and Hager's test.

2.6 Tests for proteins and amino acids

Tests like Biuret test, Xanthoprotein test, Lead Acetate test and Ninhydrin test were used for the analysis of proteins and amino acids.

2.7 Tests for tannins and phenolics

Test for tannins and phenolics were performed by adding 2-3 drops of ferric chloride to 1ml of extract for the formation of a dark blue or greenish black colour product which shows the presence of tannins.

2.8 Tests for steroids

The steroids were tested by using Libermann Burchard test, Salkowski test and Liebermann's reaction.

2.9 Test for saponins

The procedure adopted for the identification of saponins was to take 1 ml of extract which is diluted with 20 ml distilled water and then shaken in a graduated cylinder for 15 minutes. A 1 cm layer of foam indicates the presence of saponins.

3. Results and Discussion

3.1 Phytochemical screening

The hydro-alcoholic and aqueous extracts of *Holarrhena antidysenterica* were subjected to qualitative phytochemical screening for the detection of phytoconstituents like carbohydrates, alkaloids, proteins, amino acids, tannins, phenolics, saponins, steroids. The results revealed the presence of saponins, carbohydrates, proteins and amino acids, tannin, steroids, alkaloids (Table 1).

Table 1: Qualitative Phytochemical analysis of *Holarrhena antidysenterica* root extracts.

Sr. No.	Phyto constitute	Aqueous extract
1	Carbohydrates	+
2	Alkaloids	+
3	Proteins and Amino acids	+
4	Tannins and Phenolics	+
5	Steroids	+
6	Saponins	+

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