

Physiological and bio-chemical study on Kalmegh (*Andrographis paniculata* Wall. Ex. Nees.)

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ABSTRACT

Kalmegh (*Andrographis paniculata* Wall. Ex. Nees) has wide range of medicinal and pharmacological applications. It is a valuable medicinal plant, chiefly used in Indian Ayurvedic system of medicine. The andrographolide (also known as kalmeghin) which is therapeutically active principle found in aerial parts of kalmegh. The percentage andrographolide was higher at flower stage both in the branches and leaves there after decreases at full bloom stage then again increases at maturity stage. Significantly higher andrographolide content was observed in the treatment Anand Local (C_1) both in leaves as well as in branches at the initiation of flowering (S_1). Dry weight of branches and leaves was significantly higher in the same treatment viz., Anand Local (C_1) at maturity and full bloom stage (S_3 and S_2), respectively. Interaction effect C x S was found significant for all the characters studied except plant height and number of branches.

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Key words : Kalmegh, Andrographolide, Astringent, Maturity.

INTRODUCTION

Kalmegh is commonly known as 'King of Bitters'. In India, it is sometimes called "Indian Echinacea". It is distributed in tropical Asian countries, often in isolated patches. Native populations of plants are spread throughout South India and Sri Lanka which perhaps represent the centre of diversity of the species. In India it is widely distributed throughout the plains of India from Uttar Pradesh, Assam, Madhya Pradesh, Tamil Nadu and Kerala. In Gujarat, it can easily grown as wild. It is a annual herb. The herb and its isolates like andrographolide are reported to posses anti-inflammatory, astringent, tonic, and anti-pyretic properties and helps in arresting dysentery, cholera, diabetes, influenza, bronchitis, swelling and itches, piles and gonorrhoea (Prajapati *et al.*, 2003). It is also used

to treat gastrointestinal tract and upper respiratory infections (Chopra *et al.*, 1956). The andrographolide content at different days after transplanting shows variable trend among the periods. This variation may be due to the physiological stage at particular date of harvesting. The chemoprofiling study showed significant variations in the concentration of active ingredients in the leaves as well as in whole plant (Mishra *et al.*, 2010). Thus, the present investigation was undertaken to identify the appropriate physiological stage of harvest for quality produce of kalmegh.

MATERIALS AND METHODS

A field study was conducted during *Kharif* season of 2006-07 to assess the physiological and biochemical parameters of kalmegh at the farm of AINRP on Medicinal and Aromatic Plants Project, Anand Agricultural University, Anand. Randomized Block Design was adopted for the study with six replications. Three different cultures were taken as treatment *i.e.* C_1 - Anand Local, C_2 - ND-1 and C_3 - Faizabad and observations were recorded at three physiological stages *i.e.* S_1 - Initiation of flowering (60 days), S_2 - Full bloom (90 days) and S_3 - Maturity stage (130 days). Seeds were sown in beds of 4.5 x 2.0 m at 45 cm spacing.

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