J. Phytol. Res. 7 (1): 87-88, 1994

SEASONAL EVALUATION OF ASCORBIC ACID CONTENTS OF TWO ARID ZONE PLANTS *CAPPARIS DECIDUA* AND *ZIZYPHUS MAURITIANA*

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Shoot and fruits of *Capparis decidua* as well as stem, leaves and fruits of *Zizyphus mauritiana* were analysed for their ascorbic acid contents during summer and winter seasons separately. The amount of ascorbic acid was more during summer season than winter, in all parts of both the plant species. Maximum amount was estimated in fruits of *Z.mauritiana* in summer and minimum in fruits of *C.decidua* in winter season.

Keywords : Ascorbic acid; *Capparis decidua; Zizyphus mauritiana.*

Indian desert occupies the north west regions of India. Rajasthan covers most part of "Great Indian Desert"known as "Thar desert". The climatic conditions of desert are characterized by extremes of temperature, high solar radiations, high wind velocity, low relative humidity and scanty rainfall. There are only few plant species which can survive and withstand these extreme environmental conditions of arid zone part of Rajasthan. Animals and even human beings living in this area are almost completely dependent on these plant species.

Ascorbic acid is well known for its property as an electron donor in photosynthetic photophosphorylation. It is an important regulator of oxidation and plays significant role in germination, growth metabolism and flowering of plants. It stimulates amylase, protease, RNA activity and RNA content in various crops. Ascorbic acid has been reported from various parts in different plant species[1-5].All actively growing and differentiating organs show higher concentration of ascorbic acid and it is constantly utilized enzymatically[6]. By taking into consideration all these characters of "Thar desert", scaricity of forage and importance of ascorbic acid, present study of free-endogenous ascorbic acid was undertaken.

Fresh and healthy plant parts of Capparis *decidua* and *Zizyphus mauritiana* were collected in summer and winter seasons from Dungar College campus. Each plant part of both the plant species was cut into small pieces, dried, powdered separately and then used for the estimation of endogenous ascorbic acid. The exactly weighed plant material was crushed in ice cold carbondioxide saturated water and the extract was made to definate volume. 3 ml of the extract was mixed with an equal volume of buffered metaphosphoric acid at pH 3.6. A 2 ml of aliquot of this solution was mixed with 5 ml of distilled water and the turbidity produced was adjusted to zero with a spectronic-20 colorimeter. Another 2 ml aliquot was then mixed with 5 ml of 2,6-dichlorophenolindophenol prepared by dissolving 5 mg in 100 ml of distilled water at 80°C and the optical density was measured.The amount of ascorbic acid present in 1 ml of the original extract was obtained by using regression formula

Table 1. Ascorbic acid content of *Capparis decidua* and *Zizyphus mauritiana*.
Mean value expressed in mg/100 gms dry matter basis
(Five samples for each plant part)

Season	*C. decidua*		*Z. mauritiana*		
	Shoots	Fruits	Stem	Leaves	Fruits
Summer	126	95	102	126	135
Winter	120	90	98	120	131

$Y = 0.1103 - 0.14 \times O.D.$

Where : Y = Concentration of ascorbic acid in mg

O.D. = Optical density

From the content of 1 ml of the extract the ascorbic acid content per 100 gm. dry weight was calculated.

Free ascorbic acid = $(A \times V) / W \times 1000 \times 100$

where:

A = mg AA/1 ml of original extract

V = total volume of original extract

W = weight of plant sample used for analysis

Five such replicates were examined and mean values were taken.

Ascorbic acid was estimated from shoots and fruits of *C.decidua* as well as stem, leaves and fruits of *Z. mauritiana* (Table 1). Both the plant species showed maximum amount of ascorbic acid in all parts during summer season than winters. On compairing the ascorbic acid content of two plant species, maximum amount was found in fruits of *Z. mauritiana* during summer and minimum in *C.decidua* fruits during winters.

Production of free endogenous ascorbic acid and seasonal variation in its contents have been reported from leaves of *Lycium chinense*[2]. They have reported higher concentration of ascorbic acid in the month of May and November. Singh[4] observed changes in ascorbic acid level in fruits of Artocarpus *integrifolia* during mat uration stages of its formation. Nag *et al*[5] have reported endorgenous ascorbic acid from Zygophyllaceous plants and reported higher concentration in fruits of Seetzenia *orientalis* (130 mg/100gwd) and *Zygophyllum simplex* (110mg/100gdw) while minimum in roots of *Tribulus terrestris* (40mg/100gdw).

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