

## Anti-alzheimer activity of date fruit

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(Accepted : December, 2009)

*Phoenix dactylifera* (Arecaceae) a cousin of lily is cultivated primarily as a fruit. *P. dactylifera* (PD) is found to possess useful medicinal properties, such as anti-viral, gonadotropic and anti-tubercular. The present study was undertaken to investigate the effect of *P. dactylifera* fruit (Date) on cognitive functions in mice. A total of 180 young mice divided in 36 groups were employed in the present study. PD fruit was administered orally in three doses (5, 10, 20 mg w/w) for seven successive days to different groups of mice. The learning and memory parameters were assessed using elevated plus maze and passive avoidance apparatus. PD fruit showed significant improvement in the memory of animals as reflected by increased step down latency and decreased transfer latency. It also reversed the amnesia caused by scopolamine (0.4 mg/kg, i.p.) and diazepam (1mg/kg, i.p.). Furthermore, PD fruit reduced significantly the central (brain) cholinesterase activity in mice. Since diminished cholinergic transmission appears to be responsible for the development of dementia in Alzheimer patients, PD fruit may prove to be a useful medicine on account of its multifarious beneficial effects. PD fruit appears to be a promising candidate for improving memory and it could be worthwhile to explore the potential of this fruit (Date) clinically in the management of Alzheimer's disease.

Key words : *Phoenix dactylifera*, Date palm

### INTRODUCTION

Alzheimer's disease (AD) is characterized by progressive memory loss, cognitive impairment and personality defects accompanied by diffuse structural abnormalities in the brain (Parle *et al.*, 2004 a; Dhingra *et al.*, 2005). This disease affects as on today, more than 30 million patients worldwide. Slow death of brain cells particularly cholinergic neurons, extra neuronal deposits of  $\beta$ -amyloid plaques and intra neuronal fibrillary tangles are the main features of AD. Cholesterol levels appear to be intimately associated with the development of amyloid plaques in humans (Puglielli *et al.*, 2003; Sayre *et al.*, 1997; Refolo *et al.*, 2000; Sparks *et al.*, 2000). Several studies are pouring in showing a strong connection between high cholesterol and high incidence of AD (Puglielli *et al.*, 2003; Sayre *et al.*, 1997; Refolo *et al.*, 2000; Sparks *et al.*, 2000). Therefore, such substances which reduce oxidative stress, protect the brain cells from inflammatory lesions and facilitate cholinergic transmission can be therapeutically used to manage patients of AD.

*Phoenix dactylifera* L. commonly known as Date palm belongs to the family Arecaceae. It is a cousin of lily and is cultivated primarily as a fruit. Different parts of this plant are used in Indian systems of medicine for the treatment of broad spectrum of ailments including anemia, asthma, cancer, diarrhea, fever, piles, stomachache, toothache, tuberculosis and urogenital

ailments. In the light of above, present study was undertaken to investigate the effect of *P. dactylifera* fruit on cognitive functions in mice.

### MATERIALS AND METHODS

#### *Plant material* :

Fresh fruits of *Phoenix dactylifera* were collected during the month of April 2008 from the local market of Hissar, (Haryana), India. Fruits were dried under shade, sliced into pieces and pulverized using mechanical grinder. The powdered form was stored in an air tight container. This powder was used in further experiments.

#### *Animals* :

All the experiments were carried out using male, Swiss mice procured from disease free small animal house of C.C.S. Haryana Agricultural University, Hissar, (Haryana), India. Young (3-4 months old) mice weighing around 20g were used in the present study. The animals had free access to food and water, and they were housed in a natural (12h each) light-dark cycle. Food given to mice consisted of wheat in the form of dalia boiled in water with small amount of salt and refined oil. The animals were acclimatized for at least 5 days to the laboratory conditions before behavioral experiments. The experimental protocol was approved by the Institutional Animals Ethics Committee and the care of laboratory animals was taken as per the guidelines of CPCSEA,