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Antioxidant activity of ethanolic extract of fruits of *Juglans nigra* (L.)

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SUMMARY

The objective of the present investigation was to study the antioxidant action of ethanolic extract of kernel of fruits of *Juglans nigra*. The *in vitro* antioxidant activity of ethanolic extract was investigated by DPPH free radical and nitric oxide scavenging methods.

Key words : *Juglans nigra*, Kernel, Ethanolic extract, Antioxidant action.

Juglans nigra (L.), family juglanaceae, extends from Greece and Asia Minor, over Lebanon and Persia, probably all along the Hindu-Kush to the Himalayas. It is abundant in Kashmir, and is found in Sirmore, Kumdon and Nepal. Sikkim Himalaya, the Walnut inhabits the mountain slopes at an elevation of 4,000 to 7,000 feet. It was said that in the 'golden age,' when men lived upon acorns the gods lived upon Walnuts, and hence the name of *Juglans*, *Jovis glans*, or Jupiter's nuts (Duke, 2001).

The active principle of the whole Walnut tree, as well as of the nuts, is Nucin or Juglon. The kernels contain oil, mucilage, albumin, mineral matter, cellulose and water (Ramos *et al*., 1984, McGranahan and Catlin 1987).

The bark and leaves have alterative, laxative, astringent and detergent properties, and are used in the treatment of skin troubles. They are of the highest value for curing scrofulous diseases, herpes, eczema, etc., and for healing indolent ulcers. The bark, dried and powdered, and made into a strong infusion, is a useful purgative.The husk, shell and peel are sudorific, especially if used when the Walnuts are green. Whilst unripe, the nut has worm-destroying virtues. The oil extracted from the ripe kernels, has also proved good for colic and is efficacious, applied externally, for skin diseases of the leprous type and wounds and gangrenes. The kernels, when they grow old, are more oily, are used to heal the wounds of the sinews, gangrenes, and carbuncles. The kernels are also use in the case of falling hair and brain tonics (Forde, 1979).

MATERIALS AND METHODS

Kernel of fruits of *Juglans nigra* were collected from the medicinal plant material supplier and identified from K. N. K. Agriculture College.

Phytochemical screening

Preliminary phytochemical screening was done to study the presence of nucin or juglon, oil, mucilage, albumin, mineral matter, cellulose and water.

Extraction of drug

The dried kernels were extracted with 95% ethanol for 48 hours after defatting with petroleum ether (for 72 hours). The extracts were filtered and concentrated in vacuum under reduced pressure and dried in desicator.

Evaluation of Free Radical Scavenging Activity

The antioxidant activity of ethanolic extract of kernels of *Juglans nigra* was studied. It was studied with different concentration from 0.015mg/ml to 1mg/ml. *In vitro* methods DPPH Scavenging and nitric oxide Scavenging methods were used for screen the antioxidant activity.

Scavenging of Nitric Oxide

The ethanolic extract of kernel of fruits of *Juglans nigra* was dissolved in PBS in different concentration and sodium nitroprussdide was added (5 μM) in each tube and tubes were incubated at 25^0C for 5hr. Control experiments without test compound were carried out with identical conditions. After 5hr, 0.5 ml of incubation solution was removed and diluted with 0.5ml of Griess reagent. The absorbance was taken at 546 nm. Experiment was repeated for three times (Sreejayan Rao, 1997)(Table 1).

DPPH Radical Scavenging Methods

A stock solution of 0.1 ml of DPPH was prepared in ethanol. This solution was mixed with equal volume of solutions (different concentrations) of ethanolic extract in ethanol. The reaction was allowed to complete in the dark for about 20 minutes. The absorbance was taken at 517 nm. Experiment was repeated three times. The

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