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Research Article

**COMPARATIVE PHYTOCHEMICAL SCREENING AND
IN VITRO ANTI-OXIDANT ACTIVITY OF MEDICINAL
PLANTS**Abdul Mobeen, Dr. Vivekanand Katare*¹, Mr. Shivam Nema¹, Mr. Prabhat Kumar Jain ²¹Vivekanand College of Pharmacy, Bhopal (M.P.), ²Scan Research Laboratories, Bhopal (M.P.)

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Abstract:

Nelumbo nucifera Gaertn. (Nymphaeaceae) also known as sacred lotus is a large aquatic herb with stout, creeping rhizome found throughout India. Nelumbo nucifera is a native of China, Japan and possibly India. Nelumbo nucifera is reported to possess' antidiarrhoeal, psychopharmacological, diuretic, antipyretic, antimicrobial, hypoglycemic properties. Mangoes (Mangifera indica) belong to genus Mangifera and family Anacardiaceae. Mango possesses anti-diabetic, antioxidant, anti-viral, anti-inflammatory properties. Various effects like antibacterial, anti-fungal, anthelmintic, anti- parasitic, anticancer, anti HIV, anti bone resorption, antispasmodic, antipyretic, antidiarrheal, immunomodulation, hypolipidemic, antimicrobial, hepatoprotective, gastro protective have also been studied by different scholars and scientists. This paper evaluates the comparative study of Magnifera indica and Nelumbo nucifera plant extract. The yields were found to be (6.34% w/w & 7.69 % w/w) of hydroalcoholic extract Nelumbo nucifera & Mangifera indica leaves respectively. The results of phytochemical reveals that the all polar and Methanolic and aqueous soluble compound was found to be present in Nelumbo nucifera extract. Antioxidant activity of the samples was calculated through DPPH assay. % inhibition was calculated as an indicative of antioxidant potency. The higher the % inhibition the better the activity.

Key Words: Herbal Plants, Magnifera indica, Nelumbo nucifera, anti-oxidants, Hydroalcoholic**Corresponding author:****Vivekanand Katare,**

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INTRODUCTION:

Herbal plants, plant preparations and phytoconstituents have proved useful in attenuating infectious conditions and were the only remedies available, till the advent of antibiotics (many being of plant origin themselves). Among infectious diseases, viral diseases in particular, remain the leading cause of death in humans globally. A variety of phytoconstituents derived from medicinal herbs have been extensively studied for antiviral activity [1].

Mangifera indica (MI), also known as mango, aam, it has been an important herb in the Ayurvedic and indigenous medical systems for over 4000 years. Mangoes belong to genus *Mangifera* which consists of about 30 species of tropical fruiting trees in the flowering plant family Anacardiaceae. According to ayurveda, varied medicinal properties are attributed to different parts of mango tree [2].

Nelumbo nucifera Gaertn. (Fam: Nymphaeaceae) is a large aquatic herb with stout creeping yellowish white colored rhizomes, Ancient medical literature assigned the Sanskrit name Kamala to *nelumbonucifera*, there are two forms-one with white flowers commonly called Pundarika or sveta kamala and the other with pink or reddish pink flowers called Rakta Kamala. *Nelumbo nucifera* is reported to possess antidiarrhoeal, psychopharmacological, diuretic, antipyretic, antimicrobial, hypoglycemic properties [3].

The importance of oxidation in the body and in foodstuffs has been widely recognized. Oxidative metabolism is essential for the survival of cells. A side effect of this dependence is the production of free radicals and other reactive oxygen species that cause oxidative changes. There is increasing evidence for the involvement of such species in a variety of normal *in vivo* regulatory systems.¹ When an excess of free radicals is formed, they can overwhelm protective enzymes such as superoxide dismutase, catalase and peroxidase and cause destructive and lethal cellular effects (e.g., apoptosis) by oxidizing membrane lipids, cellular proteins, DNA and enzymes, thus shutting down cellular respiration.

MATERIAL AND METHODS:

Collection of Plants:

The *Mangifera indica* & *Nelumbo nucifera* leaf were collected from Akshat Nursery, Bhopal in the period of March 2022, considering the seasonal conditions for obtaining maximum phytoconstituents.

Extraction (By Maceration Method):

Maceration:

Collected plant drugs *Mangifera indica* & *Nelumbo nucifera*. Cleaned and dried plant were converted into moderately coarse powder in hand grinder. Powdered plants were weighed (50.7g) and packed in (1 liter) air tight glass Bottle. The plants were subjected to extraction by Methanol+water (80:20) as solvent for about 24 hrs. The liquid extracts were collected in a tarred conical flask. The solvent removed from the extract by evaporation method using hot plate.

Phytochemical Screening:

In order to detect the various constituents present in the Hydroalcoholic extract of roots of *Nelumbo nucifera* & *Mangifera indica*, were subjected to the phytochemical tests as per standard methods.

Antioxidant Activity:

DPPH free radical scavenging assay DPPH scavenging activity was measured by modified method. DPPH scavenging activity was measured by the spectrophotometer. Stock solution (6 mg in 100ml methanol) was prepared such that 1.5 ml of it in 1.5 ml of methanol gave an initial absorbance. Decrease in the absorbance in presence of sample extract at different concentration (10- 100 µg/ml) was noted after 15 minutes. 1.5 ml of DPPH solution was taken and volume made till 3 ml with methanol, absorbance was taken immediately at 517 nm for control reading. 1.5 ml of DPPH and 1.5 ml of the test sample of different concentration were put in a series of volumetric flasks and final volume was adjusted to 3 ml with methanol. Three test samples were taken and each processed similarly.

Finally the mean was taken. Absorbance at zero time was taken for each concentration. Final decrease in absorbance was noted of DPPH with the sample at different concentration after 15 minutes at 517 nm. The percentage inhibition of free radical DPPH was calculated.

RESULTS AND DISCUSSION:

The yields were found to be (6.34% w/w & 7.69 % w/w) of hydroalcoholic extract *Nelumbo nucifera* & *Mangifera indica* leaves respectively. Results of Phytochemical test showed the presence of Carbohydrates, Flavonoids, Proteins & Amino acids, Diterpenes and Saponins. Phenols, Alkaloid & saponin were found to absent in extract *Nelumbo nucifera*. While only alkaloid is absent in *Mangifera indica*. Antioxidant activity of the samples was calculated through DPPH assay. % inhibition was calculated as an indicative of antioxidant potency. The higher the % inhibition the better the activity. Ascorbic acid was taken as standard and the values were comparable with concentration ranging from 10

$\mu\text{g/ml}$ to $100\mu\text{g/ml}$. A dose dependent activity with respect to concentration was observed Table 3.

Table 1: Extractive values obtained from *Nelumbo nucifera* & *Mangifera indica*

S. No.	Hydroalcoholic extract	% Yield
1.	<i>Nelumbo nucifera</i>	6.34%
2.	<i>Mangifera indica</i>	7.69%

Table 2: Preliminary phytochemical screening of *Nelumbo nucifera* & *Mangifera indica*

S.N.	Phytoconstituents	Test Name	Hydroalcoholic Extract of <i>Nelumbo Nucifera</i>	Hydroalcoholic extract of <i>Mangifera indica</i>
1	Alkaloids	Wagner's Test	-(ve)	-(ve)
2	Carbohydrates	Fehling's Test	+(ve)	+(ve)
3	Flavonoids	Lead acetate	+(ve)	+(ve)
		Alkaline reagent test	+(ve)	+(ve)
4	Proteins & Amino acids	Precipitation test	+(ve)	+(ve)
5	Phenols	Ferric chloride test	-(ve)	+(ve)
6	Diterpenes	Copper acetate test	+(ve)	+(ve)
7	Saponins	Foam test	-(ve)	+(ve)

Table 3: % Inhibition of hydroalcoholic extract of *Nelumbo nucifera* & *Mangifera indica* using DPPH method

S. No.	Concentration ($\mu\text{g/ml}$)	% Inhibition		
		Ascorbic acid	<i>Nelumbo nucifera</i> extract	<i>Mangifera indica</i> extract
1	10	44.65	10.65	17.86
2	20	48.62	15.47	20.63
3	40	65.34	23.96	29.65
4	60	69.65	28.54	35.41
5	80	77.41	31.2	40.68
6	100	84.13	44.87	53.89
IC 50 value		17.68	122.76	96.56

CONCLUSION:

The results of the phytochemical test of *Nelumbo nucifera* indicated the presence of Diterpenes, Proteins and Amino acids, Flavonoids, Carbohydrates while Alkaloid, Saponin & Phenol are found to be absent. In case of *Mangifera indica* extract was discovered to be devoid of alkaloid while all other phytochemicals are present. These plants was also subjected to *in vitro* antioxidant activity, which demonstrated the existence of antioxidants needed to

combat free radicals. In order to treat many diseases and ailments, this plant portion can be used.

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