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Comparison of drying & extraction methods on activity in ficus

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ABSTRACT

Free radicals in the body are responsible for physiological stress and deterioration of the body functions. The antioxidants are used to fight the oxygen-free radicles and neutralize them. Apart from the potency of the drugs as antioxidants, there had been many reported side effects of synthetic drugs. Herbs are used as alternatives for the treatment of many diseases which are devoid of side effects. The current research focusses on the comparison of the antioxidant profile of the ethanol and methanol extracts of leaves of Tectona. *Tectona grandis* extracts were tested for antioxidant activities and compared with ethanol and methanol extracts in various methods. The results showed that the methanol extract showed better activity than that of the ethanol extract and when compared to the standard extracts showed higher antioxidant activity.

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INTRODUCTION

Free radicals in the body are responsible for physiological stress and deterioration of the body functions. These may include cancers, Alzheimer's, parkinsonism and others that involve RNA and DNA expression changes int eh body. The antioxidants are used to fight the oxygen-free radicles and neutralize them. These antioxidant drugs have different mechanisms like free radicle scavenging activity, etc. there had been many works that are under progress that are designed to fight oxidation and various publications had been made proving the antioxidant activity of those drugs [1] . Apart from the potency of the drugs as antioxidants, there had been many reported side effects of synthetic drugs. So there is an urgent need to rediscover medicines and processes to avoid side effects which enable the treatment to be safer and targeted [2] .

Herbs are used as alternatives for the treatment of many diseases which are devoid of side effects. Among the drugs, there are a lot of chemical constituents that enable them to produce antioxidant activity. Some of them include Flavonoids, Polyphenols, Tannins etc. literature says herbs can be worked and considered as best supplements to the drugs that prevent the action of side effects and adverse effects. Thus making them safe and effective in combating the free radicals [3] .

Teak known as Tectona grandis which is a native tree of south-east Asia was found to contain large amounts of gallic acid, Tannis and flavonoids like quercetin. Taking this into consideration, teak can be used as antioxidants. The current research focusses on the comparison of the antioxidant profile of the ethanol and methanol extracts of leaves of Tectona [4] .

EXPERIMENTAL DESIGN

Herbs

Leaves of *Tectona grandis* were procured from a local farm in Nellore, Andhra Pradesh and appropri

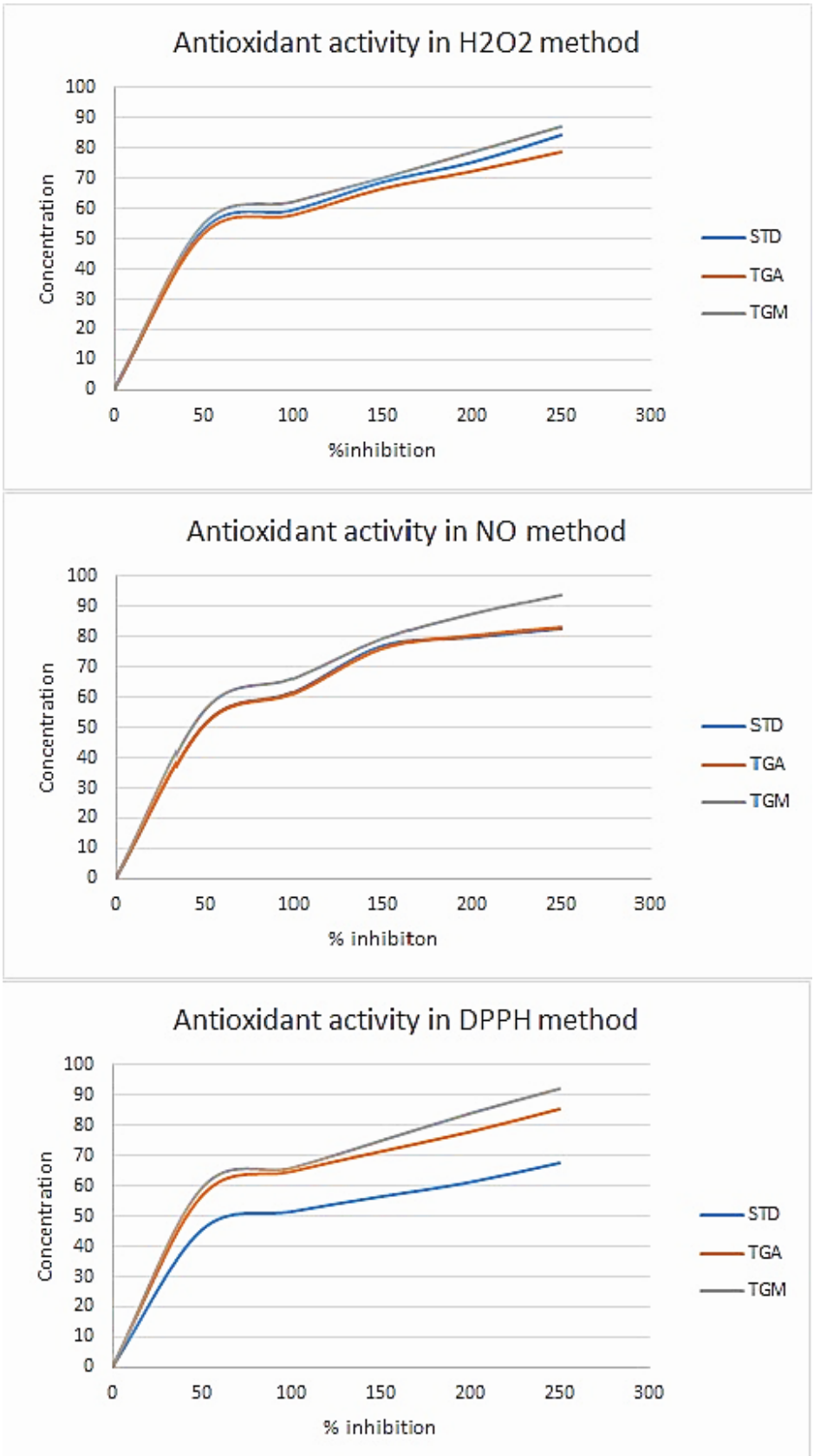

Figure 1: Comparison of Antioxidant Activities of Extracts of *Tectona grandis* leaves

Table 1: Comparison of Antioxidant Activities of *Tectona grandis* in various methods

S.No	Conc (ug/ml)	H2O2 method	NO method	DPPH method
Standard (Ascorbic Acid)				
1	50	52.91	51.09	45.28
2	100	59.28	61.58	51.33
3	150	68.57	76.83	56.28
4	200	75.08	79.55	61.05
5	250	84.11	82.46	67.42
TGE (Ethanol Extract)				
1	50	51.47	50.84	56.81
2	100	57.69	61.01	64.90
3	150	66.42	75.87	71.54
4	200	72.13	80.21	78.07
5	250	78.55	82.99	85.66
TGM (Methanol Extract)				
1	50	54.87	55.78	59.34
2	100	62.19	66.14	66.00
3	150	70.08	79.26	75.06
4	200	78.63	87.44	84.17
5	250	87.15	93.69	92.33

ately authenticated. They were shade dried under ambient temperature and humidity for five days and the dried material is powdered swiftly. The obtained powder is passed through seive40. 50gm of the drug was extracted separately with ethanol (TGE) and methanol (TGM) using Soxhlet set up. When the colourless solution ran, the extract was collected and filtered to separate particles if any. It was then dried in a vacuum desiccator and stored for further use.

METHOD

The total phenol content and flavonoid content were estimated using the Folin–Ciocalteu method [5] .

The screening for antioxidant activity was estimated in 3 methods.

H2O2 radical scavenging activity

25mg of both the plant extracts were weighed and dissolved in methanol wherein the final concentration of the extracts should range between 50-250μg/ml. The absorbance was measured at 230 nm under UV spectroscopy. The procedure was repeated for the standard drug (Ascorbic acid) also and the % of free radical scavenging was calculated using formula (Arulmozhi et al., 2010).

%scavenging = (Absorbance of control- Absorbance of sample/Absorbance of control) X 100

NO combating potency

Extracts were weighed and dissolved in methanol to make the concentrations of about 50-250μg/ml. This mixture was then dissolved into 2.5ml Phosphate buffer and sodium nitroprusside. It was incubated for half an hour and mixed with 1.5ml Griess reagent and the absorbance was noted by subjecting to UV at 546nm. The activity as determined by using the same formula as above.

DPPH Method

Various concentrations similar to the above procedure were prepared using methanol and plant extract. To this 0.3micromoles of DPPH, the reagent was mixed and allowed to react [6] . For half an hour. The absorbance was seen at517nm under UV. The formula for calculation of inhibition was similar to H2O2 activity.

RESULTS AND DISCUSSION

All the results were tabulated in Table 1 and compared and showed in Figure 1. Ascorbic acid is well known of all the antioxidant drugs that drastically lower the free radicles in the body that cause damage to the tissues and cell walls. In the H_2O_2 method, extracts showed comparably similar activity with the standard, but Methanol extract showed significantly higher activity compared to ethanol extract and is in the dose-based activity. At the concentration of 250, Methanol extract showed higher activity compared to standard. It might be due to fight-

ing of the extract with the hydroxy free radicles that are generated, which starts lipid peroxidation. The extracts successfully inhibited this process. It may be due to the presence of polyphenols abundant in the leaves.

Nitric oxide (NO) generates free radicals that involve in the process of aggregation of platelets and toxicity in cells. These inhibit the dilatation of blood vessels. In this method also, the plant extract shows better activity than the standard. The free radicals generated in this method will attack the carotene moiety in the body. The presence of varied chemical constituents in the extract may be the reason for a better activity than that of the standard. DPPH mechanism of evaluation is just to determine the reducing capacity of the drugs. It generates protons that and these will be reduced by extracts. In the extracts, there are varied constituents and this combined chemicals may have played a synergistic effect and fought with the DPPH by lowering it.

CONCLUSION

Tectona grandis extracts were tested for antioxidant activities and compared with ethanol and methanol extracts in various methods. The results showed that the methanol extract showed better activity than that of the ethanol extract and when compared to the standard extracts showed higher antioxidant activity. The extract had varied chemical constituents which require further standardization to establish standards in the activity.

CONFLICT OF INTEREST

Authors declared no conflict of interest.

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