Pharmacognostical Standardisation of *Ailanthus Excelsa* Leaves and *Randia Dumetorum* Fruit Along with Antioxidant Activity and Free Radical Scavenging Capacity of Its Fractions

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**ABSTRACT**

The world is observing an unprecedented development in the usage of herbal product at national as well as international levels. This requires the improvement of current and aimed standards for estimating the quality, safety and efficacy of these drugs. The leaves of *Ailanthus excelsa* and the fruits of *Randia dumetorum* are medicinal plants that are used for many diseases around the world. We then collected the flavonoids and saponin fraction extracted from the leaves of Ailanthus excelsa and the fruits of *Randia dumetorum*. To determine the reliability, quality and purity of these particles, we provide a crucial pharmacological profile along with the antioxidant activity. Pharmacological studies, such as morphological, physicochemical, TLC, and phytochemical analysis of all fractions containing total phenol and flavonoids, were performed according to specific methods. DPPH tests estimated the antioxidant action of all fractions, Hydrogen peroxide scavenging assay, and reducing power assay method. Previous phytochemical studies discovered the occurrence of saponins, flavonoids, tannins, and especially phenolic chemicals. All fractions have antioxidant effects, depending on the existence of a phenolic compound. The above parameters are vital to establishing pharmacological rules for the authentication of Ailanthus excelsa leaves and *Randia Dumetorum* fruits.

**INTRODUCTION**

Presently there is an enormous deal of awareness in herbal medicine today. This interest is mainly because medicinal plants do not have adverse effects. A quarter of the world’s population or 1.42 trillion people are not expected to rely on traditional medicines to treat various diseases (Kadam et al., 2012). Traditional medical systems such as Ayurveda play an essential role in today’s health field, especially in the treatment of malignant diseases (Shivatare et al., 2014). However, the most significant barriers to the use of alternative drugs in industrialised countries are the lack of documentation and strict quality control. Research on traditional medicines needs to be documented. In this context, it is vital to try to standardise the plant substance that will be utilised as a remedy (Modi et al., 2010; Shruthi et al., 2010). Normalisation can be done through pharmacological and phyto-
chemical studies. These studies help to define and standardise plant substance. Appropriate detection with a quality guarantee of preliminary materials is essential requirements for the quality of phytherapy reparation, which contributes to improving its protection and usefulness (Sharma et al., 2015; Kadam et al., 2011).

*Ailanthus excelsa* (family- Simaroubaceae) is called "Mahanimba" as it resembles a neem plant (*Azadirachta indica*). The statement *Ailanthus* is resulting as of Ailanthus, and it means procession plant (Lavhale and Mishra, 2007). The name of one of the species of Moluccas, in Latin, means high excelsa. Recent research has shown that it contains six flavonoids secluded from the leaves of *A. excelsa* (Loizzo et al., 2007). The bark of the leaves and the alcohol extracted from the stem show excellent anti-implantation activity and early abortion (Dhanasekaran et al., 1993). *Randia Dumetorum* (*Xeromphis Spinosa*) belonging to family *Rubiaceae* is a vital medicine and is called deciduous (Movalia and Gajera, 2009).

A review of the literature shows that the results are bitter and sweet; warming, aphrodisiac, emetic, vaginal, carminative, antipyretic; It treats abscesses, ulcers, inflammation, wounds, tumours, skin diseases and has an antibacterial effect (Satpute et al., 2012). Many experts believe that fruit fibres have anthelmintic properties and are also used in abortion as a folk medicine (Satpute et al., 2009).

Recently, the antioxidant properties of their components, usually polyphenol compounds, have been attributed to the function of medicinal plants in the manage or prevention of the disease. The intake of natural antioxidants while minimising the risk of cancer, diabetes, cardiovascular problems, and other age-related diseases (Subba and Mandal, 2015).

No information has been provided on pharmacological studies on the fruiting bodies of the leaves of *Ailanthus excelsa* and *Randia Dumetorum*. No data are provided on antioxidant activity. Therefore, this research focused on the standardisation of two plant fractions, measuring several aspects: morphology, physicochemistry, and TLC analysis. The content of qualitative and quantitative phytochemicals was also combined with antioxidant activities to investigate the presence of phytoactive ingredients.

**MATERIALS AND METHODS**

**Reagent and Chemicals**

The entire reagents and chemicals required for the evaluation of pharmacognostic, phytochemical screening, TLC and antioxidant activity were analytical grade obtained from J.T. Baker, Merck and Rankem.

**Procurement, authentication and extraction of sample**

The leaves of plant *Ailanthus excelsa* and Fruit of *Randia Dumetorum* were collected from fields of Bhopal (Madhya Pradesh) and validated by Safia College of Science, Bhopal. (Madhya Pradesh) were specified the specimen number 157/Bot/Safia/2010 (*Ailanthus excelsa*) and 158/Bot/Safia/2010 (*Randia Dumetorum*).

The leaves of plant *Ailanthus excelsa* and Fruit of *Randia Dumetorum* were clean and dehydrated below the shade. The desiccated samples were then ground into powdered form. All parts of the plant were crushed and extracted with water; using the method of decoration. This aqueous extract was then filtered, and alcohol (ethanol) was slowly added to this extracted liquid water to make polysaccharides. The solution was then filtered, and the filtered evaporated 1/4 of the total volume.

The same amount of ethyl acetate was then added using a separatory funnel to obtain a separate fraction of constituents of the roots in ethyl acetate. The ethyl acetate extract was acidified with 0.1 N HCl to increase the amount of the extract. The ethyl acetate fraction was evaporated to give the residue; it was then dissolved in methanol and evaporated to give a crystalline powder. Finally, the obtained powder was also analysed to determine the presence of phytoactive ingredients. In this study, it was seen that Shinoda responded positively to the flavonoid test. Besides, TLC confirmed the positivity of flavonoids in the appropriate solvent system (EAFW).

Same plant materials were used for getting saponins rich fraction. Pulverised plant materials were treated with ethanol: water (70:30) for maceration till seven days after defatting with petroleum ether (40:60). The blend was agitated at a normal interval in this stage. Obtained extract after filtration through muslin cloth followed by filter paper was concentrated using rotary vacuum evaporator (40°C), taking precaution that extract does not get powdered.

The concentrated extract was further treated with n-butanol to get an n-butanol soluble fraction. n-Butanol soluble fraction was further treated with chilled diethyl ether. After treating with chilled diethyl ether, the precipitate was formed. This mixture with precipitate was kept at -20°C for 24 hrs. Precipitates were further separated by centrifugation. This precipitate was further dissolved
in methanol and methanol was evaporated slowly, to get crystalline powder.

**Pharmacognostic Study**

**Macroscopical characters**

External features, dimensions and organoleptic properties of leaves and fruits were studied.

**Physicochemical Evaluation**

The physicochemical properties of the component were evaluated to estimate the superiority and purity of the powder form. On physical evaluation, they were ash value viz., total ash value with acid insoluble ash value and water-soluble ash value were evaluated. The value of the residue indicates that the drug contains inorganic salts. Values for the extraction of water and soluble alcohol were established. The information obtained from these tests is useful for standardising and maintaining quality standards. These chemical-physical constants are determined according to the procedures mentioned under WHO guidelines (Ibrahim et al., 2012; Baravalia et al., 2011).

**Phytochemical Investigations**

The leaves of the fruits of *Ailanthus excelsa* and *Randia Dumetorum* were subjected to phytochemical studies before extraction. A preliminary phytochemical test was performed to confirm that the occurrence of different pharmacologically active phytochemicals in the crude powered drug. The tests were performed by a regular procedure (Kokate, 1994; Khandelwal, 2005).

**TLC characterisation**

TLC is generally utilised for the quick investigation of drugs and drug preparations. Fractions were put forwarded for the characterisation through thin layer chromatography (TLC; silica gel 60 F254, Merck). Chromatograms are estimated beneath U.V. light at 254 and 365 nm to identify the existence of flavonoids plus saponin, respectively. To verify the existence of flavonoids, TLC is furthermore sprayed by an Ammonia vapour. Saponin was identified by Anisaldehyde-sulphuric acid reagent along with Vanillin-phosphoric acid reagent.

**Total phenolics Content**

The Folin-Ciocalteu technique was applied to find out the entire phenolic content of the plant extract. Gallic acid is utilised as the standard to compare with fractions, and whole phenolic acid was articulated as mg / g gallic acid equivalent (GAE). 10, 20, 30, 40 and 50 (μg / ml) gallic acid concentrations be made in methanol. Sample of 1 mg / ml of plant extract in methanol was prepared, and 0.5 ml of every above-prepared sample was added for analysis and diluted with 2.5ml of a Ciocalteu-Folin reagent (10 times dilute) and mixed with 2 ml of 7.5 per cent sodium carbonate. The tubes are covered with paraffin and set aside at room temperature for 30 mins previous to the absorbance was read at 760 nm spectrometrically. All determination is finished three times. Folin-Ciocalteu reagent is responsive to reducing agents, as well as polyphenols. After the reaction, it turns blue. This blue colour was measured spectrophotometrically (Chang et al., 2002).

**Total flavonoid content**

The colourimetric technique of aluminium chloride evaluated the total flavonoids contained inside the plant extract. Briefly, part of the sample was diluted (1 mg / ml) or standard solution (10, 20, 30, 40 and 50 μg / ml) to 75 μl. A solution of NaNO2 was added, and 0.15 ml of A1Cl3 was mixed 6 min earlier. Following 5 min, 1/2 ml of NaOH be added. The last amount was changed to 2.5 ml with purified water and mixed well.

The absorption of the combination is set at 510 nm compared to the similar combination, without the addition of the sample, as a blank. The entire flavonoid content was articulated as mg / g dry weight (mg / g D.W) using the normal calibration curve. Every sample is scrutinised three times (Villañó et al., 2007).

**Studies of Antioxidant Activities**

In vitro antioxidant activity of the different fractions at different concentration (Table 1) was studied by three procedures: with free radical scavenging by DPPH, Hydrogen peroxide assay and reducing power assay procedures.

**Sample preparation**

**AEFF:** *Ailanthus excelsa* Flavonoid Fraction

**AESF:** *Ailanthus excelsa* Saponin Fraction

**RDFF:** *Randia Dumetorum* Flavonoid Fraction

**RDSF:** *Randia Dumetorum* Saponin Fraction

**DPPH free radical scavenging activity**

To measure the DPPH radical scavenging activity, Barros et al. (2007) was carried out to the method. The drop of DPPH radicals was measured by determining the absorption at 517 nm. The radical scavenging activity was measured as a percentage of DPPH strains by the following equation, DPPH radical scavenging %

\[ \frac{(A_0 - A_1)}{A_0} \times 100 \]

Where \( A_0 \) is the absorbance of the DPPH solution and \( A_1 \) is the absorbance of the sample (Barros et al., 2007).
Hydrogen peroxide radical inhibition assay (H\textsubscript{2}O\textsubscript{2})

Ruch et al. (1989) were used the method to determine the H\textsubscript{2}O\textsubscript{2} scavenging ability of extracts. The H\textsubscript{2}O\textsubscript{2} scavenging capacities of the extracts were calculated using formula, (Ruch et al., 1989).

\[ \text{H}_2\text{O}_2 \text{ radical scavenging} \% = \left[ \frac{(A_{\text{Blank}} - A_{\text{Sample}})}{A_{\text{Blank}}} \right] \times 100 \]

Reducing power assay

The extracts were prepared in different concentrations. Phosphate buffer (2.5 ml, 2 M, pH 6.6) and potassium ferricyanide were mixed with 1 ml of each in distilled water. The blend was incubated at 50°C for 20 min. A portion of trichloroacetic acid (TCA) was added to the combination which was then centrifuged at 2000 RPM for 20 min. The superior layer of the solution was mixed with water and FeCl\textsubscript{3} (0.5ml), and the absorbance was calculated at 700 nm. Increased reducing power was indicated by increased in absorbance of the reaction mixture (Yıldırım et al., 2001).

RESULTS AND DISCUSSION

Pharmacognostical studies

Physical Evaluation

The correct identity of the leaves of Ailanthus excelsa and the fruits of Randia Dumetorum is determined by pharmacological research. Morphological research of drugs includes evaluation of drugs by colour, odour, taste, size, shape and unique features, like touch, texture etc. It evaluates special features, among others. It is a qualitative assessment technique based on an analysis of the morphological and sensory profiles of each drug (Table 2).

Graph 1: Effect of Fractions in DPPH free radical scavenging assay

Physicochemical Evaluation

When raw materials are burned, ash residues are formed consisting of inorganic materials (metal salts and silica). This value is within a reasonably wide range and is, therefore, an essential parameter for evaluating raw materials. The value of the ash identifies more direct dirt, such as sand or dirt (Table 3).

Phytochemical Investigations

Phytochemical screening of crude extracts of leaves of A.excelsa and fruit of R. Dumetorum by using chemical method revealed the presence of bioactive constituents such as Alkaloids, Carbohydrates, Flavonoids, Saponins, Tannins and Phenolic compounds, Glycosides (Table 4 and Table 5).

TLC characterisation

TLC is primary; easy to use an analytical method, and the solvent used are not hazardous and do not require advanced tools. Depending on the solvent fraction compounds, the solvent system was chosen. TLC examined all fragments of A. excelsa and R. Dumetorum, and the results of this study are, flavonoids and saponins are present infractions (Table 6).

Yield Percentage, Total Phenolics and Total Flavonoids

The fraction yield percentage, total phenolics and flavonoid contents of the extracts obtained from the aqueous extract of A.excelsa leaves and fruit of R. Dumetorum are presented in Table 7. Among the
Table 1: Concentration of different extracts for Antioxidant activity

| AEFF (µg/ml) | AESF (µg/ml) | RDFS (µg/ml) | RDSF (µg/ml) |
|--------------|--------------|--------------|--------------|
| 10           | 100          | 10           | 100          |
| 20           | 200          | 20           | 200          |
| 40           | 400          | 40           | 400          |
| 60           | 600          | 60           | 600          |
| 80           | 800          | 80           | 800          |
| 100          | 1000         | 100          | 1000         |

Table 2: Morphological characters

| Sr. No. | Particulars | Ailanthus excelsa Leaves | Randia Dumetorum Fruit |
|---------|-------------|---------------------------|-------------------------|
| 1.      | Colour      | Greyish green             | yellowish-brown         |
| 2.      | Odour       | Pleasant                  | Unpleasant              |
| 3.      | Taste       | Slightly Bitter           | Bitter                  |
| 4.      | Length      | 40–100 cm                 | 1.8 – 4.5 cm            |
| 5.      | Surface     | soft and velvety          | Smooth                  |
| 6.      | Shape       | Pinnate                   | Ovoid                   |

Table 3: Determination of Ash values of crude drugs

| Sr. No. | Particulars | A. excelsa Leaf (% w/w) | R. Dumetorum Fruit (% w/w) |
|---------|-------------|-------------------------|-----------------------------|
| 1.      | Total ash   | 9.00                    | 10.50                       |
| 2.      | Acid-insoluble ash | 1.92          | 0.5                         |
| 3.      | Water-insoluble ash | 6.10         | 4.65                        |

different fractions, the maximum yield was obtained for the Flavonoid fraction of R. Dumetorum (4%) followed by A. excelsa (3%). For total flavonoid content (TFC) estimation standard curve of Rutin was used, and content was estimated as Rutin equivalent (RE). For total phenol content estimation (TPC) standard curve of Gallic acid was used and estimated as Gallic acid equivalent (GAE). TFC in Ailanthus excelsa and Randia Dumetorum were found to be 26 and 19 µg/mg RE respectively. Total Phenol Content in Ailanthus excelsa and Randia Dumetorum were found to be 65.14 and 62.44 µg/mg GAE, respectively.

Studies of Antioxidant Activities

Due to the complexity of phytochemicals, the antioxidant activity of plant extracts cannot be evaluated using a single method. Therefore, it is vital to use generally accepted tests to evaluate the antioxidant activity of plant extracts. Many methods of antioxidants have been developed to evaluate antioxidant activity and explain how antioxidants work.

**DPPH free radical scavenging activity**

The DPPH oxidation test used in this document to measure the capacity of radical-scavenging capacity (RSC) is used worldwide. The ability of radical biological agents to remove DPPH can be expressed as a unit capable of producing antioxidants. The DPPH alcohol solution has a bright purple colour, with an absorption peak at 517 nm when one of the radical scavengers disappears in the reaction system and only one electron of nitrogen is attached to the DPPH. The reaction rate and potential of the radical promoter depend on the rate and maximum value of the DPPH event (Sharma and Gupta, 2008; Gupta and Sharma, 2010).

Compared to other methods, the DPPH test has many advantages, such as good stability, reliable accuracy, simplicity, and feasibility. The results of the DPPH process are presented in several ways. Most studies indicate an IC50 value that is defined as the amount of antioxidant needed to reduce the initial DPPH concentration by 50%. This value is measured by plotting inhibition proportion against Fractions concentration. However, for plant extracts or pure compounds, the IC50 value changes according to the final concentration of the DPPH used. AEFF showed IC50 of 42.63 µg/ml, AESF showed IC50 of 83.42 µg/ml, RDFF showed IC50 of 68.92 µg/ml, and RDSF showed IC50 of 123.22 µg/ml against DPPH radical (Table 8 and Graph 1).
### Table 4: Preliminary Phytochemical testing of parent Ethanolic extract

| Sr. No | Test            | Observation          | A. excelsa | R. Dumetorum |
|--------|-----------------|----------------------|------------|--------------|
|        |                 |                      | Leaf       | Fruit        |
| A. Alkaloids                                      |                       |            |             |
| 1      | Hager’s test    | Yellow ppt           | (+)        | (+)          |
| 2      | Mayer’s test    | White ppt            | (+)        | (+)          |
| 3      | Wagner’s test   | Reddish brown ppt    | (+)        | (+)          |
| B. Carbohydrates                                  |                       |            |             |
| 1      | Molish's Test   | Violet ring formed   | (+)        | (+)          |
| 2      | Fehling’s test  | Brick red ppt        | (-)        | (+)          |
| 3      | Barfoed’s test  | No change            | (-)        | (-)          |
| C. Cardiac glycosides                             |                       |            |             |
| 1      | Legal test      | No red color         | (-)        | (-)          |
| 2      | Keller Killiani test | No change | (-)        | (+)          |
| D. Flavonoids                                     |                       |            |             |
| 1      | Shinoda test    | Pink color           | (+)        | (+)          |
| 2      | Lead acetate test | Yellow color | (+)        | (+)          |
| E. Protein and amino acids                        |                       |            |             |
| 1      | Biuret test     | No change            | (-)        | (+)          |
| 2      | Millon’s test   | No change            | (+)        | (-)          |
| 3      | Ninhydrin test  | No change            | (+)        | (-)          |
| F. Saponins                                       |                       |            |             |
| 1      | Foam test       | No foam formation    | (+)        | (+)          |
| G. Steroids                                       |                       |            |             |
| 1      | Salkowski reaction | Yellow fluorescence | (+)        | (-)          |
| 2      | Liebermann – Burchard reaction | Green color | (+)        | (+)          |
| H. Tannins and Phenolic compounds                 |                       |            |             |
| 1      | Ferric chloride test | Deep blue-black color | (+)        | (-)          |
| 2      | Gelatin test    | White ppt            | (-)        | (+)          |
| 3      | Lead acetate test | White ppt           | (+)        | (+)          |
| 4      | Potassium dichromate test | Red ppt    | (+)        | (+)          |
| 5      | Acetic acid test | Red color            | (+)        | (-)          |
| 6      | Iodine test     | Red color            | (+)        | (+)          |
| I. Glycosides                                     |                       |            |             |
| 1      | Borntrager’s Test | NA               | (+)        | (+)          |
| J. Mucilage                                       |                       |            |             |
| 1      | Ruthenium red   | NA                   | (-)        | (+)          |
| K. Cyanogenic glycoside                            |                       |            |             |
| 1      | Sodium picrate test | NA             | (-)        | (-)          |

### Table 5: Chemical test for rich fractions

| Sr.no. | Test                     | AAFF | RDFF | Inference               |
|--------|--------------------------|------|------|-------------------------|
|        | Flavonoid rich fraction of crude drugs |      |      |                         |
| 1      | Shinoda test             | +    | +    | Flavonoids present     |
| 2      | Acid base test           | +    | +    | Flavonoids present     |
|        | Saponin rich fraction of crude drugs |      |      |                         |
| 1      | Foam test                | +    | +    | Saponins present       |
### Table 6: TLC characterization of Fractions

| Sr. No | Mobile Phase               | Spraying Reagent                      | No. of Spots | Rf Value | Inference      |
|-------|---------------------------|----------------------------------------|--------------|----------|----------------|
|       |                           |                                       | AEFF         | RDFS     | AEFF           | RDFS       |
| 1     | Chloroform: Methanol      | Ammonia vapour/VS reagent              | 2            | 1        | 0.25, 0.80     | 0.65       | Flavonoids  |
| 2     | Ethyl acetate:            |                                        |              |          | 0.34, 0.50     | 0.25, 0.45, 0.75 | Flavonoids  |
|       | Formic acid:              |                                        |              |          | 0.15, 0.19     | 0.55, 0.60 | Saponins    |
|       | Glacial acetic acid:      |                                        |              |          | 0.19          | 0.60       | Saponins    |
|       | Water                     |                                        |              |          | 0.15, 0.19     | 0.55, 0.60 | Saponins    |
| 1     | Chloroform: Gallic        | Anisaldehyde-sulphuric acid reagent    | 1            | 2        | 0.25          | 0.45, 0.70 | Saponins    |
|       | acid: Methanol: Water     |                                        |              |          | 0.15, 0.19     | 0.55, 0.60 | Saponins    |

### Table 7: Extract yield percentage, total phenolics and total flavonoid content in *A. excelsa* and *R. Dumetorum*

| S. No | Extract | % Yield | Total Phenolic Content | Total flavonoid content |
|-------|---------|---------|------------------------|-------------------------|
| 1.    | AEFF    | 3       | 65.14                  | 26                      |
| 2.    | AESF    | 2.3     | NA                     | NA                      |
| 3.    | RDFF    | 4       | 62.44                  | 19                      |
| 4.    | RDSF    | 2.6     | NA                     | NA                      |

### Table 8: Effect of Fractions in DPPH free radical scavenging assay (% Inhibition)

| S. No | Conc. (ug/ml) | AEFF | AESF | RDFS | RDSF |
|-------|---------------|------|------|------|------|
| 1     | 10            | 43.91| 30.99| 41.51| 17.89|
| 2     | 20            | 45.38| 33.21| 43.17| 20.84|
| 3     | 40            | 49.81| 39.66| 46.49| 25.46|
| 4     | 60            | 53.50| 45.38| 48.71| 30.44|
| 5     | 80            | 56.82| 49.07| 51.85| 37.45|
| 6     | 100           | 61.07| 53.50| 54.06| 44.28|
| IC<sub>50</sub> | 42.63      | 83.42| 68.92| 123.22|

### Table 9: Effect of Fractions in Hydrogen peroxide scavenging assay (% Inhibition)

| S. No | Conc. (ug/ml) | AEFF | AESF | RDFS | RDSF |
|-------|---------------|------|------|------|------|
| 1     | 10            | 36.95| 30.40| 32.51| 27.24|
| 2     | 20            | 38.00| 31.90| 34.01| 28.97|
| 3     | 40            | 42.89| 38.53| 40.63| 31.30|
| 4     | 60            | 46.12| 40.33| 42.74| 34.01|
| 5     | 80            | 48.68| 44.02| 45.67| 37.02|
| 6     | 100           | 51.32| 46.28| 47.18| 39.13|
| IC<sub>50</sub> | 88.47      | 115.75| 108.4| 181.13|
Table 10: Effect of Fractions in Hydrogen peroxide scavenging assay (Absorbance)

| S. No | Conc. (ug/ml) | AEFF  | AESF  | RDFS  | RDFF  |
|-------|---------------|-------|-------|-------|-------|
| 1     | 10            | 0.087 | 0.068 | 0.046 |       |
| 2     | 20            | 0.122 | 0.103 | 0.088 |       |
| 3     | 40            | 0.204 | 0.186 | 0.157 |       |
| 4     | 60            | 0.269 | 0.236 | 0.195 |       |
| 5     | 80            | 0.337 | 0.317 | 0.278 |       |
| 6     | 100           | 0.398 | 0.338 | 0.294 |       |

*Hydrogen peroxide scavenging*

Hydrogen peroxide itself is not very reactive, but it sometimes becomes toxic to cells because it can carry hydroxyl radicals into the cells. Therefore, the elimination of H$_2$O$_2$ is essential to protect antioxidants in cell or food systems. It was noted that all of the samples tested in this study had the effect of removing hydrogen peroxide (Pietta, 2000). IC50 values are 88.47, 115.75, 108.4, and 181.13 for AEFF, AESF, RDFS, and RDFF respectively (Table 9 and Graph 2).

*Reducing power assay*

All test samples were also found to be having better-reducing power with good goodness of fit ($R^2 > 0.9$) for all test samples. Substances with reduced potency react with potassium burkianide (Fe3 +) to form potassium burkianide (Fe2 +) and then react with iron chloride with the absorption of up to 700 nm to form a ferric, ferrous complex iron (Table 10 and Graph 3). With an increase in concentration, absorbance increased for all test samples (Wenli et al., 2004).

**CONCLUSION**

Pharmacological standardisation of the two plants includes physicochemical assessment, identification, verification, and detection of adulteration and quality control of the crude drug. Hot aqueous extract from the leaves of *Ailanthus excelsa* and the fruits of *Randia Dumetorum* showed free radical scavenging, Hydrogen peroxide scavenging and reducing power activity. The antioxidant activity of each fraction of the two plants can be attributed to the polyphenol content and phytochemical components. The results of this study suggest that fractions of both plants could be a natural source of antioxidants as a therapeutic agent for a biological system that is sensitive to free-reaction intermediates.

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**Conflict of Interest**

There are no conflicts of interest among all the authors with the publication of the manuscript.

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