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Phytochemical Investigation and Invitro Evaluation of Antioxidant Activity of Mucuna Pruriens Root

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Abstract— *The phytochemical constituents and antioxidant activity of Mucuna pruriens root was determined via in vitro model. The extraction from the plant roots was using different solvents (distilled water, petroleum ether, ethylacetate, methanol and ethanol) in soxhlet extractor apparatus. The qualitative phytochemical analysis of Mucuna pruriens root extracts showed the presence of alkaloids, flavonoids, Steroids, phenolic compounds and tannis in all solvent root extracts except in petroleum ether while terpenoids was absent only in water extract. Quinones were present in petroleum ether, ethylacetate and ethanolic extracts and saponin was found only in ethanolic extract. The total phenolic and total flavonoid content of the methanolic, ethanolic and water extracts were estimated spectrophotometrically using tannic acid and quercetine respectively as standard. The total phenolic content obtained from methanolic, ethanolic and water extracts were 27.40±0.17, 30.66±2.68 and 45.95±2.68µg/g respectively of tannic acid equivalent while that for flavonoid content were 96.31±0.06, 60.79±0.79 and 58.26±1.23µg/g respectively of quercetin equivalent from methanolic, ethanolic and water extracts respectively. Furthermore, invitro antioxidant activity of both the methanolic and ethylacetate extracts of Mucuna pruriens root were carried out using ascorbic acid as standard. The methanolic extract showed antioxidant activity in scavenging a DPPH radical with a maximum percentage inhibition of 66.78% at 250 µg/ml that of ethylacetate extract was 66.27% whereas for the ascorbic acid, it was 71.35% at 250µg/ml. The IC_{50} was calculated graphically and the result obtained are 154 µg/ml, 165 µg/ml and 122 µg/ml respectively. The invitro models indicate that Mucuna pruriens root extract is a better source of natural antioxidant. This justifies its application in traditional and herbal medicine in the treatment of various diseases and correction of sexual anomaly such as erectile dysfunction caused by reactive oxygen species (ROS).*

Keywords— *Phytochemical constituents, Total phenolic content, Total flavonoid content, Antioxidant activity, Reactive oxygen species, Oxidative stress, Mucuna pruriens, Invitro model.*

I. INTRODUCTION

The word phytochemical was derived from Greek word phyton meaning 'plant'. Hence, phytochemicals are chemical combinations that occur naturally in different plant species. Each and every plant contains hundreds of phytochemicals and research evidence exists that these phytochemicals can help prevent many diseases. Some phytochemicals are responsible for colour and organoleptic properties. Although they may have biological significance, they are not recognized as essential nutrient. Thus, phytochemical are non-nutritive plant chemicals that have protective or disease preventive properties. They are required by the body to sustain life. It is well known that plant produce these chemicals to protect themselves but recent studies have shown that they can also protect humans against diseases (Karthishwaran *et al.*, 2010). The most important bioactive components of plants are alkaloids, flavonoids, and phenolic compounds (Sudhira et al, 2015). The presence of these chemicals in plants have made them (plants) indispensable and richest sources of drugs for traditional system of medicine, pharmaceutical intermediates and chemical entities.

It is estimated that nearly 70 - 80% of the world population depends on the traditional medicines which are derived from plants base compounds. India has one of the oldest, richest and most diverse cultural traditions associated with the use of medicinal plants which are of great importance to the health of individuals and communities in general (Rajendra and Estari, 2013). Over 80% of Nigerians in rural areas and about 40% in the urban areas depend partly or wholly on traditional medicine (Offor, 2015). Rajendra and Estari (2013) noted that in India and many Africa countries including Nigeria, extract from medicinal plants are being use in curing diseases or correcting certain anomalies associated with human organs and tissues. There exists a well maintain balance between antioxidant mechanism and free radical generation in a normal healthy individual. These balances, however shift towards the production of excessive free radicals or deficit in antioxidant defense in disease state and leads to condition called oxidative stress. Oxidative stress have be found to be the leading cause of hundreds of diseases or disorders in human body. Body Systems that are most susceptible to attack or damage by free radicals include the eyes, brain, pulmonary, circulating and the reproductive system (Sudhira, Venkateswara and Kamakshamma, 2015). There are specialized experimental evidences which suggested that by quenching the free radical antioxidants help reduce the risk of chronic diseases. These antioxidants are either internally synthesized or consumed. Nowadays, the application of plants based antioxidants or natural antioxidants are replacing synthetic molecules because of toxicities associated with the later. Studies have shown that phytochemicals like phenolic acids, polyphenols, flavonoids, flavans, terpenoids and phytoestrogens scavenge the free radical activity thus inhibiting the oxidative mechanisms (Natarajan, Narayanan and Ravichandran, 2012).

Mucuna pruriens is a twining and tropical legume that belong to the family called fabaceae. It is well known as velvet bean, and with some other common names such as cowitch and devil bean (English), Agbora (Igbo) Yerepe (Yoruba), Iyekpe (Ika), Igherekpe (Urhobo) and many others. All parts of *Mucuna pruriens* including the root possess

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valuable medical properties and it is traditionally used for the treatment of tumors, hypoglycemic, hypertension, sexual dysfunction (impotent, weak erection and low sperm quality) and vermifuge (Taylor, 2003, and Rahamann, 2012). However little or no work had been report on the phytochemical constituents, total phenolic, total flavonoid content and antioxidant activity of this plant root. In view of the dearth of information in the literature evaluating the antioxidant property of the root of this plant. This study was undertaken to investigate the phytochemicals constituents in the extract of *Mucuna* pruriens root as well as their antioxidant activity using DPPH invitro model.

II. Material and Method

2.1 Sample Collection

The root of *Mucuna pruriens* (Igherekpe in Urhobo language) was collected from Campus II Area in Abraka Delta State. The plant collected was taxonomically identified and authenticated by Dr Akinnibosun Henry Adewale of the Department of Plant Biology and Biotechnology, University of Benin where a voucher specimen was prepared and herbarium specimen number UBHm324 was deposited. The root was then collected in a large quantity and was washed under running tap, air dried, pulverized, labelled and kept till when needed for the analyses.

2.3 Preparation of the Extract

The plant active ingredients were obtained by extraction method described by Ijaiy *et al.,* (2014) with slight modification.

35g each from a total of 175g pulverized *Mucuna pruriens* root was extracted in soxhlet extractorwith petroleum ether (60-80^{o}C), ethyl acetate, methanol and ethanol for 6 – 8 hours respectively. The remaining 35g of the pulverized root was also subjected to cold water extraction by maceration process for 3 days. All the extracts were concentrated on a rotary evaporator, dried and percentage yield of extract was calculated. The percentage yield was calculated from the formula below:

$$\% \text{ Yield } = \frac{\text{Dried yield of extract} \times 100}{\text{Original sample extracted}}$$

2.4 Phytochemical Analysis of Crude Extract of Mucuna pruriens Roots

The plant extract was screened for the following constituents using standard method (Ijaiya *et al*., 2014; Alebiosu and Yusuf, 2015).

2.4.1 Test for alkaloids

0.3g of each extract was stirred with 3ml of 1% aqueous hydrochloric acid on a steam bath. 2ml of the filtrate was divided into two portion. To the first 1ml 2 drops of Dragendorff's reagents was added. To the second portion Wagner's reagent was added and observed.

2.4.2 Test for flavonoids

Two methods were used to test for the presence of flavonoids. In the first method, 1ml of each extract was dissolved in 2mls of sodium hydroxide solution, dilute hydrochloric acid was added and observed. In the second method, 2ml of each extract was shaken with 1ml of dilute ammonia solution and observed.

2.4.3 Test for phenolic compound

To 2ml solution of each extract was added 2 drops 1% aqueous solution of lead acetate. Appearance of yellow precipitate indicates positive test for phenolic compounds.

2.4.4 Test for steroids

5 drops of concentrated sulphuric acid was added to 1ml of each extract and observed. A reddish brown colouration indicates the presence of steroids.

2.4.5 Test for Saponins

2ml of the solution of each extract was mixed with 5ml of distilled water in a test tube. The test tube was stoppered and shaken vigorously for about 5minutes, it was then allowed to stand for 10minutes and observed for honeycomb froth which indicates the presence of Saponins.

2.4.6 Test for tannins

To 2ml of each extract was added 4ml of 10% ferric chloride solution was added, a brownish - green or a blue – black colouration indicated the presence of tannins.

2.4.7 Test for Terpenes

To 1ml solution of each extract was added equal volume acetic anhydride and concentrated sulphuric acid down the wall of the test tube to form a layer under earth. The formation of a reddish violet colour indicates the presence Terpenes

2.4.8 Test for Quinone

1ml of each extract was treated with two drops of concentrated sulphuric acid, formation of brown colouration indicates the presence of quinone.

2.6 Quantitative Determination of Phytochemical Constituents of Mucuna pruriens Root

2.6.1 Quantitative Determination of Alkaloids

The quantitative determination of alkaloids was carried out by the alkaline precipitation through modified Gravimetric method described by Ogudoro et al. (2014). Twenty grammes (20g) of the sample was soaked in 20ml of 10% ethanolic - acetic acid. The mixture was allowed to stand for 4 hr at room temperature. Thereafter, the mixture was filtered through Whatman filter paper no.1. The filtrate (extract) was concentrated by evaporation over a steam bath to a quarter of its original volume. For the alkaloids to be precipitated, concentrated ammonia solution was added in drops to the extract until it was in excess. The resulting alkaloid precipitate was recovered by filtration using a previously weighed filter paper. After filtration, the precipitate was washed with 1% ammonia solution and air dried for 60minutes and reweighed. The experiment was repeated two more times and the average was taken. The weight of alkaloids was determined by difference and expressed as a percentage of the weight of the sample analyzed as shown.

$$\% \text{ Alkaloids } = \frac{W_2 - W_1}{\text{Wt of sample}} \text{ x } 100$$

W_1 = Weight of Filter paper
W = Weight of paper + alkaloid precipitate

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2.6.3 Determination of Total Phenolic Content

Total phenolic content was determined according to the Folin and Ciocalteau's method in Bhaigyabati, *et al*., (2015**)**.Tannic acid was used as a standard. Concentrations of 50, 100, 150, 200 and 250 µg/ml of tannic acid were prepared in methanol. The same Concentrations of the methanolic plant extracts were also prepared in methanol and 0.5 ml of each sample was mixed with 2.5 ml of a ten-fold diluted Folin-Ciocalteau's reagent and 2 ml of 7.5% sodium carbonate. The mixture was allowed to stand for 30 min at room temperature before the absorbance was read at 760 nm spectrophotometrically. The total phenolic content was expressed as tannic acid equivalent (TAE) by the following equation;

$$\text{TPC} = \frac{\text{C} \times \text{V}}{\text{W}}$$

TPC is the total phenolic content in µg/g of the extracts as TAE, C is the concentration of tannic acid established from the calibration curve in µg/ml. V is the volume of the extract solution in ml and W is the weight of the extract in g (Bhaigyabati, *et al*., 2015**).** All determinations were performed in triplicates.

2.6.3 Determination of Total Flavonoid Content

Total flavonoid content was estimated by Aluminium chloride spectrophotometric method in Bhaigyabati, *et al*., (2015**)**.

Quercetin solutions of various concentrations were used to make the standard calibration curve. 0.025g of quercetin was measured with OHAUS electric weighing balance(0.001-190g) and was dissolved in 100ml methanol and then diluted to 200, 150, 100 and 50µg/ml using methanol.250 µg/ml Stock solutions of the plant extracts were also prepared by dissolving 0.025g each of the methanolic, ethanolic and water extracts in 5ml of the corresponding solvents and transferred to 100ml volumetric flask and made up the volume with appropriate solvents .These were further diluted to 200, 150, 100, and 50 µg/ml. 10% aluminum chloride and 1M sodium acetate were prepared using ethanol and distilled water respectively.

The assay was determined using 1mL of each dilution of extract of the plant root and each dilution of standard quercetine taken separately in test tubes. To each test tube 1ml of 10% aluminum chloride ethanol, 1 mL of sodium acetate (1M) and 1mL distilled water were added and mixed well. Reaction mixture then incubated for 30 min at room temperature and absorbance was measured at 420nm. This was compared to the standard curve of quercetin concentrations and expressed as microgram of quercetin equivalents per gram (µg QE/ g) of dry weight.

2.7 Determination of Antioxidant Activity of Root Extracts of Mucuna pruriens

The antioxidant activity or the capacity to scavenge the ''stable'' free radical was determined using the 2,2' diphenyl-1-picrylhydrazyl radical (DPPH) free radical scavenging activity, a method described by Garba *et al.,* (2012). In the method, OHAUS electric weighing balance (0.001-190g) was used to measured 0.003g of 2,2' diphenyl -1-picrylhydrazyl radical (DPPH which is a stable radical)and then dissolved in 100ml of methanol and the solution was allowed to stand for 30mins. The absorbance was then measured at 517nm.

The solution of the extract was prepared by also using OHAUS electric weighing balance (0.001-190g) to measure 0.025gfrom the dried methanolic and ethylacetate extracts. Each of measured dried extract was then dissolved separately in 100ml of methanol to make a stock solution of extract in 250ug/ml. A serial dilution was further carried out to make solutions of extract with the concentrations of 200, 150,100 and 50ug/ml. A portion, 2ml of DPPH solution was added to 2ml of each sample solution, shaken and allowed to stand for 30min, after which, the decrease in absorption, at 517nm was measured. The decrease in absorption of the test sample was calculated by subtracting that of the control.

The same procedure would be carried out using vitamin C (Ascorbic acid) as standard. All test and analysis was carried out in triplicates and the results obtained were averaged. Radical scavenging activity (RSA) was calculated as the percentage inhibition of DPPH discolouration using the equation below;

$$\%\ \text{RSA or}\ \%\ \text{inhibition} = \frac{\text{A}_{\text{DPPH}} - \text{A}_{\text{S}}}{\text{A}_{\text{DPPH}}} \times 100$$

Where A_s = Absorbance of the solution when the sample extract was added at a particular level of DPPH. The quality of the radical scavenging property of the *Mucuna pruriens* root extract was determined by calculating the inhibition concentration at 50% (IC_{50}). The IC_{50} value is the concentration of each root extract required to scavenge the DPPH radical to 50% of the control.

2.8 Statistical Analysis

Data are given as the mean ± Standard Error of Mean (SEM) of three measurements. The IC_{50} values were calculated from the linear plot of percentage inhibition against concentration. Correlation between total phenolic content, total flavonoid content and DPPH % inhibition was by linear regression. The analysis was done using Microsoft Excel 2016 version

III. Results and Discussion

3.1 Percentage Yield of Extracts

The yield of different crude extracts from the 35g of extracted pulverized sample of *Mucuna pruriens* root with different solvents are shown in table 3.1.

TABLE 3.1. The percentage yield of different extracts of *Mucuna pruriens* root.

S/No.	Solvent	Colour of extract	Yield of the dried extract(in gm)	Percentage yield (%)
1	Petroleum ether	Pale Yellow	0.80	2.28
2	Ethyl acetate	Brown	8.20	23.43
3	Methanol	Brown	9.20	26.29
4	Ethanol	Reddish brown	3.00	8.57
5	Water	Brown	2.20	6.29

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International Research Journal of Advanced Engineering and Science
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The amount obtained from 35g each of the sample extracted are 0.80gm, 8.20gm, 9.20gm, 3.00gm and 2.20gm for petroleum ether, ethylacetate, methanol, ethanol and water extracts respectively. From these amount the percentage yield was calculated with reference to the original sample taken for extraction (35g of pulverized Mucuna pruriens root).

3.2 Phytochemical constituents of the root extracts of Mucuna pruriens

The qualitative phytochemical analysis carried out the different extracts *Mucuna pruriens* root revealed the presence of medicinal active constituents as presented in table 3.2. In these screening process alkaloids, saponins, phenolic compounds, tannins, flavonoids, quinones and terpenoids shows different types of results in different solvents extracts. Among these phytochemical analysis alkaloids, flavonoids, phenolic compounds and tannis were present in ethyl acetate, methanol ethanol and aqueous (water) solvent extracts, except in petroleum ether. Steroids were present in all solvent extracts whereas terpenoids are present all extracts except for that of water. Quinones are in petroleum ether, Ethyl acetate and ethanol extracts, and saponin was found only ethanol extract.

TABLE 3.2. Phytochemical constituents of the root extract of *Mucuna pruriens.*

s/n	Phytoconstituents	Test	Observation	Petroleum ether	Ethyl acetate	Methanol	Ethanol	Water
1	Alkaloid	Dragendorff	Reddish brown ppt	-	+	+	++	++
		Wagners	Green or violet ppt	-	+	+	+	++
2	Flavonoid	Alkaline	Yellow ppt. ppt disappear in HCl	-	+	++	+	++
3	Phenolic compound	Lead acetate	Yellow ppt	-	+	++	++	++
4	Saponin	Frothing	Honeycomb froth	-	-	-	+	-
5	Steroids	Sulphuric acid test	A reddish –brown ppt	++	++	+++	++	+
6	Quinones	Quinones test	Brown ppt	++	+	-	+++	+
7	Tannins	Ferric chloride test	A brownish-greenish or blue-black colouration	-	+	+++	+++	+
8	Terpenoids	Terpenoids test	Reddish- violet colour	++	+	+	+	-

KEY: - Not present, + low presence, ++ moderately presence, +++ high presence

3.3 Quantitative Phytochemical Constituents of Mucuna pruriens root

Mucuna pruriens root was quantitatively analysed for alkaloid, phenolic and flavonoid content and the results are presented follows.

3.3.1 Total Alkaloid Content of Mucuna pruriens Root

The result obtained from the determination of total alkaloid content of *Mucuna pruriens* root is presented in table 3.3.

TABLE 3.3. Total alkaloid content of *Mucuna pruriens* root.

Extract	Total Alkaloid Content (%w/w)
Ethanolic-acetic acid extract of *Mucunapruriens* root	2.37±0.02

The value in the table is the mean ±SEM from triplicate determinations

3.3.2 The Total Phenolic Content (TPC) of the Extracts of Mucuna pruriens Root

Total phenolic contents of *Mucuna pruriens* root extract at different concentration are presented in table 3.3. The total phenolic content expressed as µg TAE/g was determined spectrophotometrically based on the calibration curve achieved for tannic acid with the regression equation (y = 0.0051x + 0.0167, R^2 = 0.9953 figure 3.2a) where is y is absorbance and x is tannic acid equivalent. The TPC for the methanolic extract was found to range from a minimum of 3.82±0.06µg TAE/g to a maximum of 27.40±0.17µg TAE/g, that for the ethanolic extract was found to range from a minimum of 1.80±0.23 to a maximum of 30.66±2.26 while that of water extract ranged from a minimum of 4.42±0.19 to a maximum of 45.95±2.68µg TAE/g. The content of total phenolic was higher for water extract compared to the two other extracts of *Mucuna pruriens* and the phenolic content decreases as concentration of the extracts decreases (fig.3.2b).

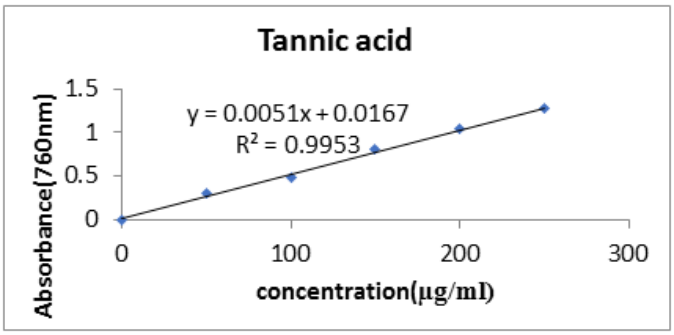

Fig. 3.2a. Standard calibration curve for total phenolic content for standard tannic acid.

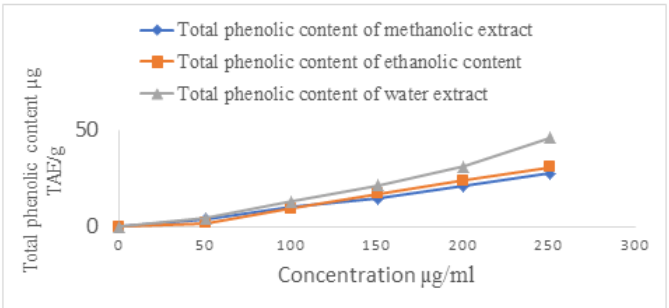

Fig. 3.2b. Variation of total phenolic content (µg TAE /g) in methanolic, ethanolic and water extracts of *Mucuna pruriens* root.

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International Research Journal of Advanced Engineering and Science
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3.3.3 Total Flavonoid Content of the Extracts of Mucuna pruriens Root

The flavonoid content of the extracts in terms of quercetin equivalent (the standard curve equation: y = 0.003x + 0.009, R^2= 0.986; Fig. 3.3a) were found to range between 4.43±0.49 to 96.31±0.06, 5.55±0.04 to 60.97±0.79and 5.75±0.04 to 58.26±1.23µg $g^{-1}$for methanolic, ethanolic and water extracts respectively. The result clearly shows that the total flavonoid content was higher in the methanolic extract and the flavonoid content was found to decrease as the concentration of extract decreases (fig. 3.3b).

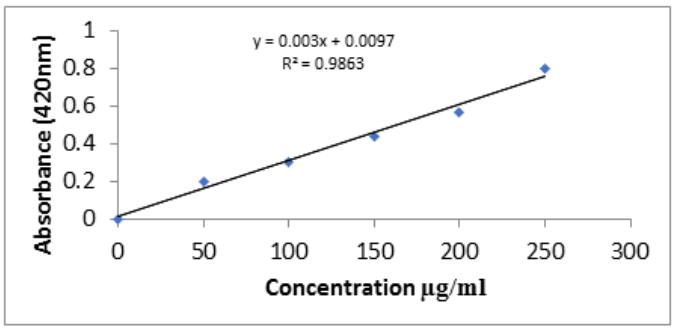

Fig. 3.3a. Standard calibration curve for total flavonoid content for standard quercetin.

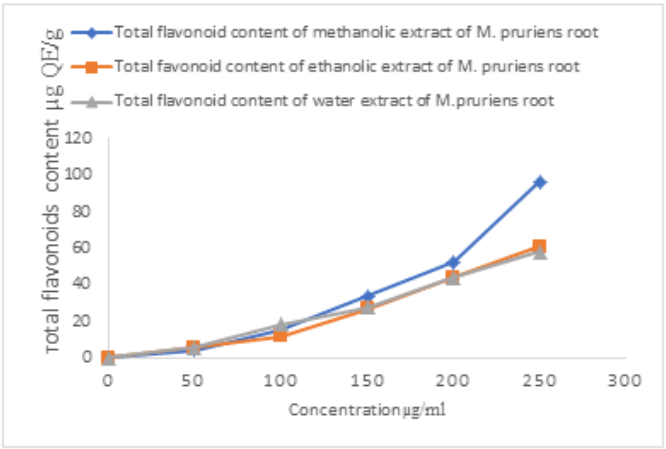

Fig. 3.3b. Total flavonoid content in µg/g (in QE) of methanolic, ethanolic and water extracts of *Mucuna pruriens* root.

3.4 Antioxidant Activity of the Methanolic and Ethyacetate Extracts

3.4.1 Antioxidant Activity of Methanolic Extract of Mucuna pruriens Root with Respect to Standard Ascorbic Acid

DPPH assay is being used widely as a preliminary test which provides information on the reactivity of test compound with a stable free radical since odd electron of DPPH gives strong absorption band at 517nm (violet colour) and when it is quenched by the extract, there is a decrease in absorbance. Methanolic extract of *Mucuna pruriens* root showed a very good anti-radical activity in scavenging DPPH radical (comparable to the standard, Ascorbic acid fig. 3.4) with a maximum percentage inhibition of about at 66.78% at a concentration of 250µg/ml whereas for ascorbic acid (standard) was found to be 71.35% at a concentration of 250µg/ml as shown in table 3.4. The IC_{50} of the methanolic extract of *Mucuna pruriens* root and ascorbic acid were found to be 154µg/ml and 122µg/ml respectively.

TABLE 3.4. Antioxidant activity of methanolic extract of *Mucuna pruriens* root with respect of standard Ascorbic acid.

S/N	Concentration (µg/ml)	% of antioxidant activity (±SEM)	
		Sample (Methanolic Extract)	Standard (Ascorbic acid)
1	50	24.84±0.92	28.82±0.21
2	100	33.65±0.35	47.38±1.40
3	150	57.73±4.41	61.35±0.01
4	200	63.01±1.41	71.09±0.13
5	250	66.78±0.71	71.35±0.08
		IC_{50} =154µg/ml	IC_{50} =122 µg/ml

The values in the table are the mean ±SEM from triplicate determination

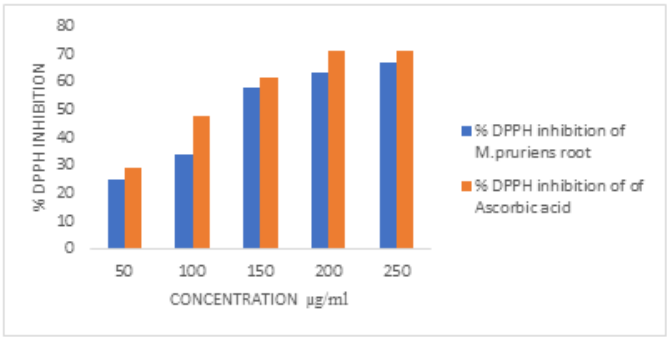

Fig. 3.4. Percentage inhibition vs concentration of Methanolic extract with respect to ascorbic acid.

3.4.2 Antioxidant Activity of Ethylacetate Extract of Mucuna pruriens Root with Respect to Ascorbic Acid

The ethylacetate extract of *Mucuna pruriens* was also assessed for its capacity to scavenge DDPH free radical along with respect to ascorbic acid as a standard control. The antioxidant activity data are presented as percent of free radical inhibition in table 3.5. Ethylacetate extract of *Mucuna pruriens* root showed a very good anti-radical activity in scavenging DPPH radical (comparable to the standard, Ascorbic acid) with a maximum percentage inhibition of about 66.27% at a concentration of 250µg/ml whereas for ascorbic acid was found to be 71.35% at a concentration of 250µg/ml (as shown in table 3.5). The IC_{50} of the methanolic extract of *Mucuna pruriens* root and ascorbic acid were found to be 165µg/ml and 122 µg/ml respectively.

TABLE 3.5. Antioxidant activity of methanolic extract of *Mucuna pruriens* root with respect of standard Ascorbic acid.

S.No	Concentration (µg/ml)	% of antioxidant activity (±SEM)	
		Sample (Ethylacetate Extract)	Standard (Ascorbic acid)
1	50	14.52±2.80	28.82±0.21
2	100	20.32±0.92	33.65±0.35
3	150	59.76±0.24	61.35±0.01
4	200	64.68±0.08	71.09±0.13
5	250	66.27±0.04	71.35±0.08
		IC_{50} =165µg/ml	IC_{50} =122 µg/ml

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The values in the table are the mean ±SEM from triplicate determinations

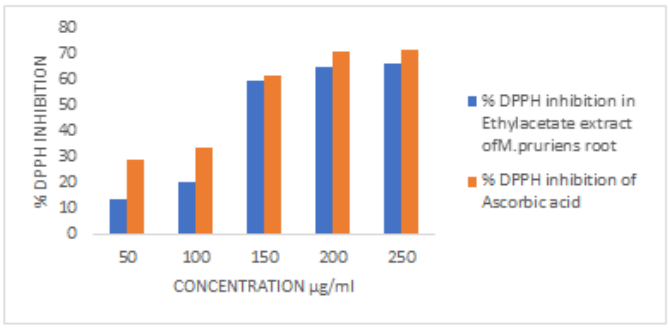

Fig. 3.5. Percentage inhibition vs concentration of ethylacetate extract with respect to ascorbic acid.

3.5 Correlation between DPPH% Inhibition, TPC and TFC

Correlation analysis was used to explore the relationships between total phenolic, flavonoid content and the DPPH % inhibition methanolic extract of *Mucuna pruriens*. There was a significant linear correlation between the free radical scavenging activity determined by using the DPPH and total polyphenolic compounds (phenolic and flavonoids). The R^2 value of the correlation between DPPH % inhibition and the total phenolic content (0.888) and total flavonoid content (0.739), for the methanolic extract of *Mucuna pruriens* as shown in fig. 3.5 and fig. 3.6 respectively.

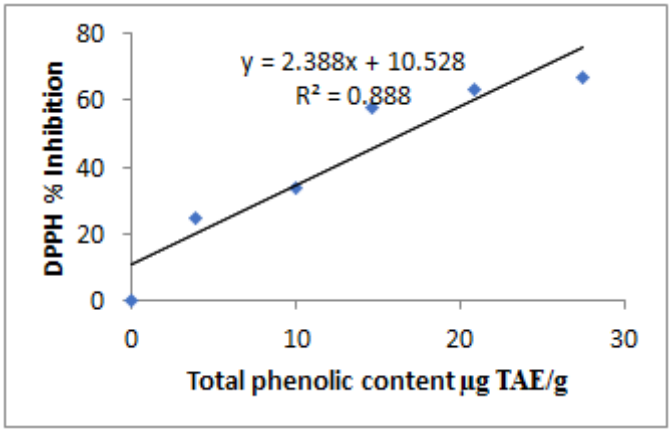

Fig. 3.6. Correlation between DPPH % free radical scavenged activity and the total phenolic content (µg TAE/g DW), (R^2= 0.888, SE =7.586, p< 0.05)

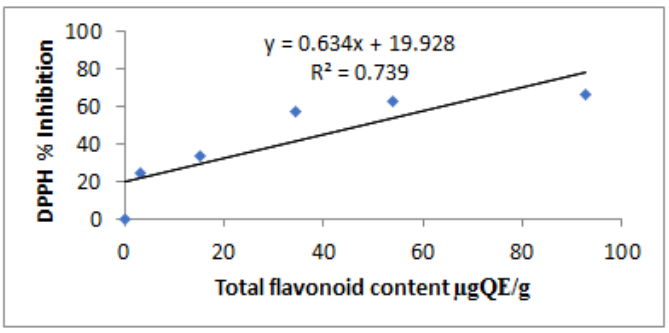

Fig. 3.7. Correlation between DPPH % free radical scavenged activity and the total flavonoid content (µg QE/g DW) (R^2= 0.739, SE=7.091, p< 0.05).

The two values show there is positive correlation between DPPH % inhibition and total phenolic content and flavonoid content methanolic extract of *Mucuna pruriens* root respectively. This correlation is statistically significant at $p< 0.05$. These results suggest that a great part of the antioxidant capacity of the plant extracts is attributed to the total phenolic and flavonoid contents in the extract, which have the hydrogen-donor ability to scavenge the free radicals.

IV. Conclusion

The screening of *Mucuna pruriens* root for phytochemical constituents have shown that the plant root constitutes vital bioactive components with the potential to act as a source of useful drugs and also to improve the health status of the consumers as a result of the presence of various compounds that are vital for good health. The quantitative analysis carried out on the methanolic, ethanolic and water extracts show that total amounts of phenolic compounds were maximum in water extracts followed by ethanololic extract and least in methanolic extract, whereas total amounts of flavonoid compounds were maximum in methanolic extract followed by ethanolic extract and least with water extract. The percentage DPPH inhibition values recorded for the methanolic and ethylacetate extracts of the plant, even though they are not greater than that of the standard antioxidant (ascorbic acid), showed that *M. pruriens* root is a relatively good source of antioxidant activity. The antioxidant activity of *M. pruriens* root is due to the high total flavonoid content and phenolic content. The therapeutic efficacy of plant root in the treatment of various ailments and anomalies such as erectile dysfunction may be due to its antioxidant property. This justifies the use of the plant root in traditional system of medicine in the treatment of various ailments and anomalies such as erectile dysfunction caused by oxidative stress. Further research need to be carried out on the plant root for the isolation and characterization of the actual phenolics and flavonoids responsible for its antioxidant action and determining its actual effect on nitric oxide which has been said to be a mediator of sexual function in man.

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