Phytochemicals, Antioxidants and Antimicrobials Components in Leaf Extracts of *Curcuma Caesia Roxb* with Reference to Location

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Abstract

Medicinal plants

were used as a positive control and methanol were also kept as vehicle control.

Assessment of antioxidant activity

The antioxidant activity of the two varieties was determined by FRAP((Ferric Reducing Antioxidant Power Assay) method. The reagent was freshly prepared in the lab. Different concentrations (10-50 µg/mL) of the methanolic extract (2.5 ml each) were taken and added to 2.5 mL of 0.2 M sodium phosphate buffer (pH 6.6) and 2.5 mL of 1% potassium ferricyanide solution. The resulting mixture was vortexed well and then incubated for 20 min at 50°C. At the end of the incubation, 2.5 mL of 10% trichloroacetic acid was added to the mixture and centrifuged at 3,000 rpm for 10 min. The supernatant (2.5 mL) was mixed with 2.5 mL of deionized water and 0.5 mL of 0.1% ferric chloride. The colored solution was read at 700 nm against the blank using UV Spectrophotometer. Here, ascorbic acid was used as a reference standard the reducing power of the samples was compared with the reference standard [3].

Results

The methanol extract of the Native variety and Himalayan variety of *Curcuma caesia roxb* were investigated and compared for antimicrobial and antioxidant activities. The percentage yield of the extract of the Native variety and Himalayan variety of *Curcuma caesia roxb* are shown in Table 1.

Extract	Percentage yield
Himalayan variety	15.5% w/w
Native variety	14.6% w/w

Table 1: Percentage yield of extract.

Phytochemical screening of the samples

The phytochemical analysis of both the extracts was performed to evaluate the presents of various constituents in *Curcuma caesia roxb*. The results of the phytochemical screening are shown in Table 2. The phytochemical analysis confirmed the presence of alkaloids, flavonoids, tannins, and phenolic compounds.

Sl No	Chemical constituents	Himalayan variety	Native variety
1	Alkaloids	+	+
2	Carbohydrates	-	-
3	Flavonoids	+	+
4	Tannins and phenolic test	+	+
5	Glycoside	-	-
6	Saponins	-	-
7	Protein and amino acids	-	-

Assessment of antimicrobial activity

In the evaluation of the antimicrobial activity of the Himalayan variety and native variety of Curcuma Caesia, both gram-positive and gram-negative bacteria were used and results were compared. The antibacterial activity of both extracts was more promising for gram-positive organisms. Himalayan variety exhibited more significant antimicrobial activity in gram-positive bacteria than the Native variety. The activity of the extracts on the gram-negative organism was also evaluated. The Activity index was calculated using Penicillin and Streptomycin as standards for gram-positive and gram-negative organisms respectively. Activity index more than 0.5 indicates that both bu

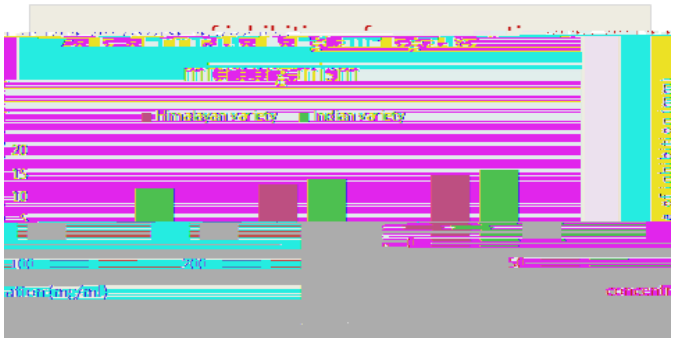

Figure 1: Zone of inhibition produced by the extracts on gram-negative microorganism.

The antioxidant activity of the methanolic extracts of leaves of the Himalayan and native variety of *Curcuma Caesia* was found to be increased with an increase in the concentration of active components. It was observed that a significant correlation exists between the concentration of the extract and % inhibition. (Correlation coefficient R2: Standard ascorbic acid -0.997, Himalayan variety-0.992 and Native variety-0.996) respectively. IC 50 values were calculated to establish a relationship between the antioxidant activities of both extracts (Figure 2).

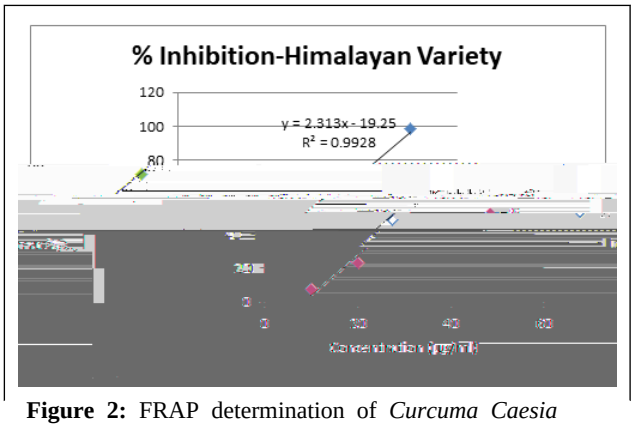

Figure 2: FRAP determination of *Curcuma Caesia* (Himalayan variety).

Discussion

The present study was carried out to compare the antimicrobial and antioxidant activity of *Curcuma Caesia* : q