A comparative study on Genomic activity of Hydro alcoholic extract of Curcuma aromatica and Curcuma zedoaria rhizomes

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Curcuma aromatica and curcuma zedoaria belongs to the family Zingiberaceae. Hydro alcoholic extract was prepared by hot and cold maceration process to identify their phyto constituents. 50 % hydro alcoholic extract of *Curcuma aromatica* salisb found to contain alkaloids, tannin and flavonoids where as *Curcuma zedoaria* (Christm.) Roscoe contain alkaloids and flavonoids. Total phenol content was found to be 77.88095±1.7 and 38.08095±1.37 for *Curcuma aromatica* and *Curcuma zedoaria* respectively which was represented as mg/g of gallic acid. Total flavonol content was found to be 459.5333±8.68 and 21.3333±1.11 for *Curcuma aromatica* and *Curcuma zedoaria* respectively which was represented as mg/g of Quercetin percentage of curcumin present in the *Curcuma aromatica* is 6.14±2.13 % and 3.84±1.76 % in the *Curcuma zedoaria*.

When compared to the ascorbic acid and rutin which showed the IC50 value 6.0±1.0 and 11.75±0.48 respectively in DPPH method. Curcumin showed potent antioxidant activity. among all the test compounds which showed the IC50 value 15.75±1.82 where as *Curcuma aromatica* salisb and *Curcuma zedoaria* (Christm.) Roscoe showed IC50 value 37.45±2.5, 227.8±4.875 respectively. IC50 values were represented in μg/ml.

In Nitric oxide method, rutin was used as standard which showed the IC50 value at the concentration of 88.47±2.54 μg/ml. Curcumin showed the most potent activity in Nitric oxide method and its IC50 value was found to be 108.47± 2.72 where as IC50 value for *Curcuma aromatica* salisb was found to be 372.27±3.23 μg/ml. Even at 1000 μg/ml concentration *Curcuma zedoaria* fails to answer for the Nitric oxide method.

Ascorbic acid was used as standard which showed the activity in the concentration of 3.51±0.007 μg/ml. Curcumin and *Curcuma zedoaria* showed potent reducing power at the concentration of 4.521± 0.014 and 12.726± 0.066 μg/ml and *Curcuma aromatica* showed reducing power at the concentration of 4.717 ±0.065 μg/ml.

Total antioxidant capacity for curcumin, *Curcuma aromatica* and *Curcuma zedoaria* was found to be 58 ±4.379, 107.2 ±3.923, 283 ±3.00 respectively. The results were represented as mM equivalent to ascorbic acid.

In this method β-hydroxy aniline was used as standard or reference compound. β-hydroxy aniline showed the hydroxyl radical scavenging activity with the IC50 value of 75.6 ±0.06. When compared to the standard β- hydroxy aniline, curcumin was found to be potent and it showed the hydroxyl radical scavenging activity with IC50 value of 95.56 ±1.643. *Curcuma aromatica* scavenged the hydroxyl radical with the IC50 value of 302.85.
±2.68 and *Curcuma zedoaria* showed the hydroxyl radical scavenging activity with IC50 value of 829 ±0.650.

In this method α-tocopherol was used as standard compound. It showed the lipid peroxidation activity with the IC50 value of 100.5 ±0.12 μg/ml. When compared to α-tocopherol, curcumin was found to be potent in the LPO assay with the IC50 value of 110 ±2.15 μg/ml, *Curcuma aromatica* showed the IC50 value of 420 ±0.869 μg/ml and *Curcuma zedoaria* showed the IC50 value 630.2 ±1.23 μg/ml.

Genotoxicity studies were carried out by different methods such as Ames test, chromosomal aberration test, micronucleus test, potato disc assay, DNA sugar damage test, SOS test, Plasmid nicking assay, and the effect was confirmed by sequential analysis. Curcumin alone was found to be genotoxic even at the concentration of 250 μg/ml where as the hydro alcoholic extract of *Curcuma aromatica* and *Curcuma zedoaria* was found to be non-genotoxic even at the highest concentration i.e 1000 μg/ml. curcumin found to produce the chromosomal aberrations when compared to other two extract. In all remaining studies curcumin was found to produce genotoxic effect than hydro alcoholic extract of Curcuma aromatic and curcuma zedoaria

Key words: Ames test, Micronucleus test, Curcuma aromatica, Curcuma zedoaria, SOS test, DNA sugar damage test, Plasmid nicking assay