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# PROXIMATE ANALYSIS OF ROOT, STEM AND LEAVES OF *CISSUS QUADRANGULARIS* LINN

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## ABSTRACT

Moisture, ash content and cold water, hot water, 1% NaOH and HCl solubility of *cissus quadrangularis* linn, root, stem and leaves samples have been investigated in proximate analysis. These resuts directly hamper the drug effect, drug activities, stability of drug and drug potency and also the side effects of drug.

**Key words**: *Cissus quadrangularis*, Proximate analysis.

## INTRODUCTION

*Cissus Quadrangularis* Linn, is medicinal plant belonging to family Vitaceae ancient system of medicine such as Ayurveda and used to treat various diseases and disorders[1]. *Cissus qadrangularis* is weed plant that is used commonly in India and Shrilanka to hasten fracture healing process[2,3]. Leaf, steam and root extract from this plant are used in the management of various ailments[4-8]. *Cissus quadrangularis* Linn, is used as antimicrobial and anti-osteoporotic and antiviral activity[9,10]. Stem given internally and applied tropically to bone fracture.

The literature survey on *Cissus quadrangularis* Linn. showed that every part of plant posseses a range of medicinal, pharmacological, industrial and biochemical significance[11-13], so it was planned to carry out the proximate analysis of *Cissus quadrangularis* Linn.

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## EXPERIMENTAL

First the site was selected in Shendurjana-Ghat, Tal-Warud, Dist-Amravati of Maharashtra State. Before picking the whole plant, the soil was moistened. They were washed smoothly by distilled water, the roots, stem and leaves were separated from plants by scissor and all were shed dried at room temperature. Each part of the sample was crushed separately in pestle-mortar to isolate fine powder. This powder was treated as sample powder for various analysis. The samples were taken for the proximate analysis viz, percentage of moisture content, ash content solubility in cold water, hot water, NaOH and HCl.

### Moisture content

Take first crucible constant 1 g of each root, stem and leaf samples were taken in different crucible and crucible were kept in oven at $110^{o}$ C for 1 hour. It was then weighted after cooling and kept in oven again till it showed constant reading.

### Ash content

Take first crucible constant moisture free 1 g of each root, stem and leaf samples were taken in different crucible and heated over blue flame of Bunsen burner for 3 hrs. and then place in furnace at $600^{o}$ C for 5 hrs. Sample was totally converted into white ash. This process was repeated till it showed constant readings.

### Cold water solubility

1 g of dried samples of root, stem and leaf was put in 100 mL distilled water for 1 hr. It was filtered through previously weighted sintered glass crucible washed with distilled water, dried in a oven at $110^{o}$C and weighted.

### Hot water solubility

1 g of dried samples of root, stem and leaf was put in 150 mL distilled water. It was heated over boiling water bath for 1 hr. and filtered through previously weighted sintered glass crucible. Residue was washed with hot water. Dried in oven at $110^{o}$C and weighted.

### Solubility in 1% NaoH

1 g of dried sample of root, stem and leaf was put in 100 mL aquous sodium hydroxide. It was heated on water bath for 1 hr. and filtered through previously weighted sintered glass crucible. Residue was washed with distilled water, dried in oven at $110^{o}$C and weighted.

**Solubility in 1% HCl**

1 g of dried sample of root, stem and leaf was put in 100 mL hydrochloric acid. It was heated on water bath for 1 hr. and filtered through previously weighted sintered glass crucible, residue washed with distilled water, dried in a oven at 110$^{o}$C and weighted.

## RESULTS AND DISCUSSION

**Table 1: Moisture content**

| Sample | Actual weight of sample taken (g) | Weight of sample after analysis (g) | Loss weight of sample (g) | Moisture content (%) |
|---|---|---|---|---|
| **Root** | 1.000 | 0.868 | 0.132 | 13.2 |
| **Stem** | 1.000 | 0.737 | 0.263 | 26.3 |
| **Leaf** | 1.000 | 0.816 | 0.184 | 18.4 |

**Table 2: Ash content**

| Sample | Actual weight of sample taken (g) | Weight of sample after analysis (g) | Loss weight of sample (g) | Ash content (%) |
|---|---|---|---|---|
| **Root** | 1.000 | 0.893 | 0.107 | 10.7 |
| **Stem** | 1.000 | 0.822 | 0.178 | 17.8 |
| **Leaf** | 1.000 | 0.868 | 0.132 | 13.2 |

**Table 3: Cold water solubility**

| Sample | Actual weight of sample taken (g) | Weight of sample after analysis (g) | Loss weight of sample (g) | Cold water solubility content (%) |
|---|---|---|---|---|
| **Root** | 1.000 | 0.880 | 0.120 | 12.0 |
| **Stem** | 1.000 | 0.840 | 0.160 | 16.0 |
| **Leaf** | 1.000 | 0.860 | 0.140 | 14.8 |

**Table 4: Hot water solubility**

| Sample | Actual weight of sample taken (g) | Weight of sample after analysis (g) | Loss weight of sample (g) | Hot water solubility content (%) |
|---|---|---|---|---|
| **Root** | 1.000 | 0.860 | 0.140 | 14.0 |
| **Stem** | 1.000 | 0.810 | 0.190 | 19.0 |
| **Leaf** | 1.000 | 0.830 | 0.170 | 17.0 |

**Table 5: 1% NaOH solubility**

| Sample | Actual weight of sample taken (g) | Weight of sample after analysis (g) | Loss weight of sample (g) | 1% NaoH solubility (%) |
|---|---|---|---|---|
| **Root** | 1.000 | 0.620 | 0.380 | 38.0 |
| **Stem** | 1.000 | 0.510 | 0.490 | 49.0 |
| **Leaf** | 1.000 | 0.490 | 0.510 | 51.0 |

**Table 6: 1% HCL solubility**

| Sample | Actual weight of sample taken (g) | Weight of sample after analysis (g) | Loss weight of sample (g) | 1% HCL solubility (%) |
|---|---|---|---|---|
| **Root** | 1.000 | 0.030 | 0.970 | 97.0 |
| **Stem** | 1.000 | 0.020 | 0.980 | 98.0 |
| **Leaf** | 1.000 | 0.030 | 0.970 | 97.0 |

A proximate analysis of root, stem and leaves of *Cissus quadrangularis* (L.) was studied. It was observed that the stem sample contained 26.2% moisture content and only 17.8% ash content. The percentage of these parameters clearly indicates that stem of *Cissus Quaddrangularis* (L.) is best for drug action and effects. The cold water solubility and hot water solubility of samples showed 16.00% and 19.00% results respectively. These results are best for drug transport and drug receptor interactions are controlling force in dilute solutions, which increases potency, drug action and also drug effect. As the cold water solubility and hot water solubility are less so this factor is responcible for negligible side

effects. Hence in herbal drugs side effects are are less or negligible as compared to allopathic drugs. It is also observed from 1% NaoH solubility and 1% HCl solubility that the result obtained during the study are best i.e. NaOH solubility is 49.04%. These results are directly related to stability of drug and stability of drug directly influence on drug potential, drug action and drug effects.

The result of solubility have their own importance in pharmaceuticals and medicinal sciences because specific and non specific and physicochemical interactions like lipid solubility, osmomolarity membrane penetration of drugs depends on these results. These results directly hamper the drugs effect, drugs activities, stabilities of drug and drug potency also the side effects of drug. The drug stability, drug potency, drug effect and side effect depend upon transport of drug across cell membrane and also through blood in the body.

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