SOME PHARMACOGNOSTICAL CHARACTERISTICS OF ASPARAGUS RACEMOSUS WILLD, ROOTS

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ABSTRACT: The macroscopic character of the roots physical constant values, extractive values, behaviour on treatment with different chemical reagents, fluorescence characters under ultra violet light after treatment with different chemical reagents of the powdered roots of Asparagus racemosus Willd, (Fam. Liliaceae) were studied to fix some pharmacognostical parameters.

INTRODUCTION

Asparagus racemosus willd is a tall climber, undershrub, distributed in low jungles of tropical and subtropical parts on India and Ceylon, upto 4000 ft, in the Himalaya, from Kashmir eastwards – Tropical Africa Java and Australia 1,2.

The root of A racemosus is popular for its various medicinal uses such as appetizer, stomachic, tonic aphrodisiac galactogogus, expectorant, laxative, useful in dysentery, tumours, inflammations biliousness, disease of blood and eyes, disease of kidney and liver throat complaints tuberculosis, leprosy gonorrhoea, scalding urine, epilepsy and night blindness (Ayurveda & Unani) 1,2.

It is useful in Madhura rasam, Madhura vipakam, seta-veeryam, polyurea, chronic fevers, soma-rogam, white discharge, internal and tonic (Ayurveda & Siddha) 2.

The roots has been reported to have galactogogue activity 3 duodenal ulcer healing 4,5 and antimicrobial activity 6.

The present investigation deals with the studies on some important pharmacognostical properties of the roots as a whole and its powdered form.

MATERIALS AND METHODS

Plant materials

The roots of A. racemosus were collected from Jhilimili, Bankura district of West Bengal during the month of August and September. They were identified by botanical survey of India, shibpur, Howrah. The roots were washed with tap water and was shed dried, powdered and kept ready for further use.

Reagents

All the reagents were of analytical grade and obtained from S.D Fine- chem. Ltd Bombay.

Methods

The macroscopic character (Colour, odour, size, shape taste, surface, texture) of the roots were observed 7. The ash values of
The alcohol (90%) soluble and water soluble extractives were determined by maceration process, other extractive values were determined successively starting from petroleum ether (60-80°C), benzene, chloroform, acetone and methanol by using soxhlet extraction apparatus, the dried extractive were obtained after evaporation of solvent under reduced pressure, the behaviour of the powdered roots with different chemical reagents were studied and the fluorescence characters were also observed under ultra violet light at 254 nm. Preliminary phytochemical tests of different extractives were performed by specific reagents.

RESULTS AND DISCUSSION

The macroscopic characters are shown in table 1. The physical constant values includes total ash, acid insoluble ash alcohol (90%) and water soluble extractive are reported in table 2, the water soluble extractive is more as compared with alcohol (90%) soluble extractive.

The extractive values obtained after successive extraction is reported in table 3. The benzene extract shows minimum extractive value, whereas methanol shows maximum, extractive, the results of preliminary phytochemical tests for the presence of active constituents is reported in table 4. It is confirmed that roots contain reducing sugar, sterol and saponin, the behaviour of the powdered roots on treatment with different chemical reagents and the fluorescence character of the same under ultra violet light is shown in table 5 and table 6 respectively.

### Table 1: Macroscopic character of *A. Racemosus* willd, roots.

| Colour          | The fresh roots are white to buff in colour, dried roots are white to grayish white in colour, internally slight yellowish. Y. slight yellowish |
|-----------------|-------------------------------------------------------------------------------------------------------------------------------------|
| Odour           | No specific odour                                                                                                                   |
| Size            | About 5 to 60 cm in length and 1 to 2.5 cm in thickness                                                                              |
| Shape           | The roots are fleshy, tuberous, tapering towards both end, it swells considerably when soaked in water                                 |
| Taste           | Slightly bitter                                                                                                                      |
| Surface         | Rough, sign of shrinkage after drying                                                                                                 |
| Fracture        | Short and fibrous.                                                                                                                    |

### Table 2: Physical constant values of *A. Racemosus* roots.

|                      | Percentage |
|----------------------|------------|
| Total ash            | 6.461      |
| Acid insoluble ash   | 1.297      |
| Alcohol (90-%) soluble extractive | 27.100 |
| Water soluble extractive | 30.146   |
Table 3: Ex values of *A. Racemosus* roots.

| Solvents                  | Percentage of extractive values | Colour of extractive          |
|---------------------------|---------------------------------|-------------------------------|
| Petroleum ether (60-80°C) | 0.419                           | Yellowish gray                |
| Benzene                   | 0.195                           | Deep brown                    |
| Chloroform                | 0.609                           | Brownish black                |
| Acetone                   | 10.840                          | Reddish brown                 |
| Methanol                  | 27.697                          | Reddish brown                 |

Table 4: Preliminary Phytochemical tests for the presence of active constituents in *A. racemosus* roots.

| Extracts                        | Alkaloid | Reducing sugar | Tannin | Flavonoid | Sterol | Saponin | Anthraquinone |
|---------------------------------|----------|----------------|--------|-----------|-------|---------|--------------|
| Petroleum ether (60-80°C)       | -        | -              | -      | -         | +     | -       | -            |
| Benzene                         | -        | -              | -      | -         | +     | -       | -            |
| Chloroform                      | -        | +              | -      | -         | +     | -       | -            |
| Acetone                         | -        | +              | -      | -         | +     | +       | -            |
| Methanol                        | -        | +              | -      | -         | +     | +       | -            |
| Alcohol                         | -        | +              | -      | -         | +     | +       | -            |
| Water                           | -        | +              | -      | -         | +     | +       | -            |

+ Present; - Absent
Table 5: Colour of the powdered roots of *A. racemosus* on treatment with different reagents.

| Reagents                                | Colour of powder  |
|-----------------------------------------|-------------------|
| Picric acid (saturated aqueous solution)| Yellowish         |
| Nitric acid (specific gravity 1.42)     | Reddish           |
| Hydrochloric acid (specific gravity 1.16)| No change       |
| Sulphuric acid (80%)                    | Brownish black    |
| Glacial acetic acid                     | Greyish           |
| Sodium hydroxide (5 N aqueous solution)  | Yellowish         |
| Iodine (aqueous solution)               | Reddish           |
| Ferric chloride (aqueous solution 5%)   | Brownish black    |
| Antimony trichloride                    | Brownish          |
| Powder as such                          | Greyish white     |

Table 6: Fluorescence characters for the powder roots of *A. racemosus* under ultra violet light

| Treatment                                                                 | Fluorescence          |
|---------------------------------------------------------------------------|-----------------------|
| Powdered mounted with nitrocellulose                                      | Yellowish white       |
| Powder treated with sodium hydroxide in methanol                          | Green                 |
| Powder treated with sodium hydroxide in methanol dried and mounted with nitrocellulose | Yellowish brown      |
| Powder treated with hydrochloric acid                                     | Green                 |
| Powder treated with hydrochloric acid dried and mounted with nitrocellulose | Reddish              |
| Powder treated with sodium hydroxide in water                            | Greenish              |
| Powder treated with sodium hydroxide in water dried and mounted with nitrocellulose | Brown               |
| Powder treated with nitric acid diluted with equal volume of water        | Brownish              |
| Powder treated with sulphuric acid diluted with equal volume of water     | Greenish              |
| Powder as such                                                           | Greyish white         |

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