

Determination of Phytoconstituents of *Blepharis Repens* (VAHL) Roth. Stem Through GC-MS

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ABSTRACT

Phytochemical constituents are responsible for medicinal activity of plant species. Hence in the present study phytochemical constituents presents in the *Blepharis repens* (Vahl) Roth stem. The shade-dried stem of *Blepharis repens* were extracted with methanol, the concentrated extracts was further subjected to GC-MS. The GC-MS analyses determined the presence of 13 different phytochemical compounds in the methanol stem extract of *Blepharis repens*. The phytochemical compounds were found in the mass spectra was matched with the National Institute of Standards and Technology (NIST) library. In methanol extract of stem 13 compounds were detected. The major phytoconstituents are vitamin-E (20.77%), squalene (18.77%), stigmasterol (23.36%), β -sitosterol (21.31%). The results of the present study reveal that the stem of *B. repens* having effective potential bioactive compounds, which may be leads to the formulation of new drugs to treat various diseases.

Keywords: *Blepharis repens*, phytomedicines, phytoconstituents, GC-MS, secondary metabolites.

I. INTRODUCTION

Plants and various plant products have been used to treat or prevent illness since before recorded history. 'Virikhayurveda' and 'Rig Veda' are few of the well known documentation in traditional herbal medicine available in the form of literature written around 2000 B.C. (Sharma *et al.*, 2011). Drugs from the plants are easily available; they are less expensive, safe, and efficient and rarely have side effects (Yadav *et al.*, 2011).

According to the estimate of WHO, 80% of the population use traditional medicine as their primary health care measure and 85% of this include plant extracts, which may be in crude form or as their active ingredient (WHO, 1993). Phytochemicals are the

compounds formed during the plants normal metabolic processes. Being the by-products, these chemicals are often referred to as "secondary metabolites". The major classes of these metabolites includes alkaloids, phenolic components and flavonoids, tannins, terpenoids, coumerins and glycosides (Harborne, 1973 and Okwu, 2004).

To determine the potential and promote the use of herbal medicine, it is essential to intensify the study on medicinal plants that has been used as folklore (Awadh *et al.*, 2001). Plants are used medicinally in different countries and are a source of many potent and powerful drugs (Shrivastava *et al.*, 1996). There is a continuous and an urgent need to discover new compounds with diverse chemical structures and novel mechanisms of

action for new and re-emerging infectious diseases (Rojas *et al.*, 2003). Therefore the present investigation was planned to investigate the major phytoconstituents present in *Blepharis repens* (Vahl) Roth stem.

II. METHODS AND MATERIAL

Collection of plant materials:

The plant was collected from forest localities of Yavatmal District . Identification were made with the help of standard floras (Karthikeyan and kumar, 1993, Naik, 1998).

Preparation of powder and extract of various parts of selected plants :

The collected plant material was shade dried and mechanically powdered and stored in an airtight container. Various extracts was prepared according to the methodology of Sadashivan and Manickam (2005). The shade dried plants parts were allowed to pulverization to get coarse powder. The coarse powder materials were subjected to Soxhlet extraction

separately and successively with acetone and methanol extracts.

Gas Chromatography and Mass Spectroscopy (GC-MS) Profiling:

The analysis was carried out using gas chromatography – high resolution mass spectrophotometer. Dried extract were dissolved in the 5 ml of methanol solvent 0.4 µl of this solution is employed for GC – MS analysis. The GC-MS analysis was carried out using Trace GC Ultra (Thermo Scientific) with column (HP-5) of 30 meter length, 0.25 mm diameter and 0.25 film. Helium gas is used as carrier gas at constant flow rate of 1ml/minute. Injector temperature was set at 250 °C. The oven temperature were programmed from 80°C to 280 °C. 80°C 1 minute hold up to 200 °C at 8 °C/ minutes, 7 minutes hold up to 280 °C at the rate of 10 °C/minutes. The sample was injected in split mode as 20:1. Identification of the compounds was done by comparing the spectral data of sample compound with the compound spectra present in spectral libraries (NIST).

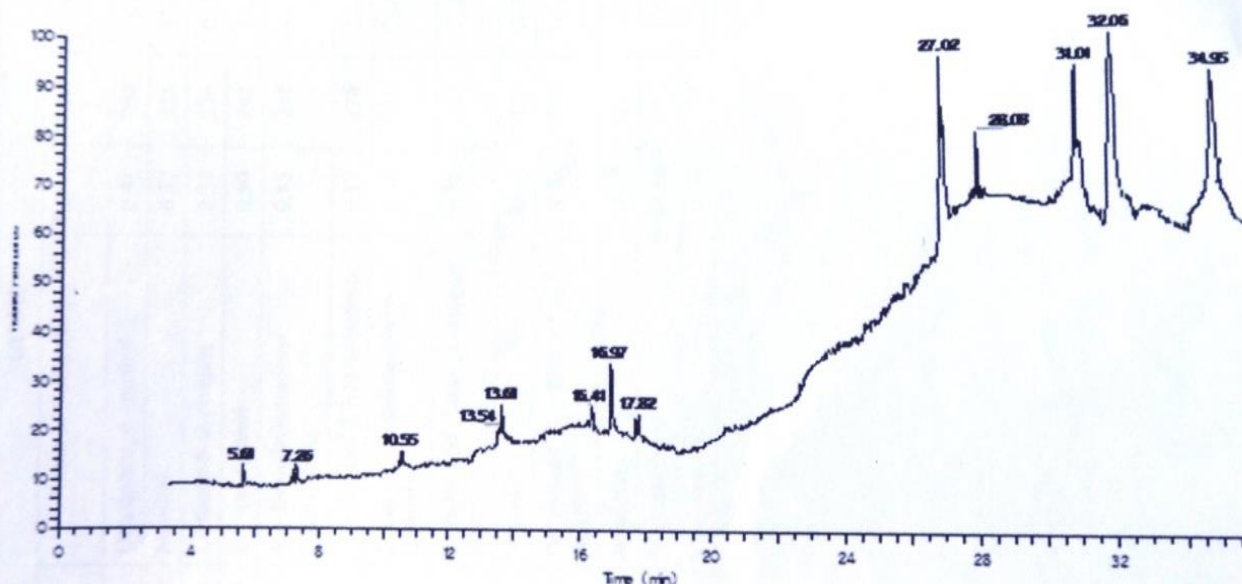


Fig 4.1: Total ion Chromatogram of Methanol extract of *Blepharis repens* Stem

Table 4.1: Phytochemical Profiling of methanol extract of *B. repens* stem by GC-MS

| Sr.No. | R.T. | Name of Compound | Rel. % | MW | MF |
|--------|-------|---|--------|-----|--|
| 1 | 5.61 | Octadecane, 6 – methyl | 0.41 | 268 | C ₁₉ H ₄₀ |
| 2 | 7.25 | Menthol | 0.37 | 156 | C ₁₀ H ₂₀ O |
| 3 | 10.55 | Limonen-6-ol-pivalate | 0.33 | 236 | C ₁₅ H ₂₄ O ₂ |
| 4 | 13.54 | 2- Hexadecanol | 0.50 | 242 | C ₁₆ H ₃₄ O |
| 5 | 13.61 | 1,1- Dimethyltetradecyl Hydrosulfide | 0.83 | 258 | C ₁₆ H ₃₄ S |
| 6 | 16.41 | 1-Dodecanol,3,7,11-trimethyl- | 0.37 | 228 | C ₁₅ H ₃₂ O |
| 7 | 16.97 | 2- Cis - 9 - Octadecenyloxy- ethanol | 1.33 | 312 | C ₂₀ H ₄₀ O ₂ |
| 8 | 17.82 | Phthalic acid , butyl , tetradecyl ester | 0.75 | 418 | C ₂₆ H ₄₂ O ₄ |
| 9 | 27.02 | Vitami-E | 20.77 | 430 | C ₂₉ H ₅₀ O ₂ |
| 10 | 28.08 | Octadecane , 3 – ethyl – 5 - (2-ethylbutyl)- | 10.84 | 366 | C ₂₆ H ₅₄ |
| 11 | 31.01 | Squalene | 18.77 | 410 | C ₃₀ H ₅₀ |
| 12 | 32.06 | Stigmasterol | 23.36 | 412 | C ₂₉ H ₄₈ O |
| 13 | 34.95 | β – Sitosterol | 21.31 | 414 | C ₂₉ H ₅₀ O |

III. RESULTS AND DISCUSSION

The phytochemical profiling of plant extract was determined by GC-MS technique. Table 4.1 represent the finding of GC-MS analysis of plant extract. In methanol extract of stem 13 compounds were detected. The major phytoconstituents are vitamin-E (20.77%), squalene (18.77%), stigmasterol (23.36%), β-sitosterol (21.31%).

IV. CONCLUSION

This is the first report of documentation of active constituents from stem of *B. repens*. The results of the present study reveal that the stem of *B.repens* having effective potential bioactive compounds, which may be leads to the formulation of new drugs to treat various diseases.

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