

## Miscellany

### Optimum stage of harvest for extraction of total withanolides in aswagandh (*Withania somnifera* Dunal)

Aswagandh (*Withania somnifera* Dunal) is an important medicinal plant grown in India. The leaves, stems and roots of the plant contain withanolides and steroidal lactones, which exhibit marked activity against various diseases especially, bacterial infections in human beings. An anticancer alkaloid principle, withaferine has also been extracted from aswagandh roots. The alkaloid recovery in aswagandh grown in Madhya Pradesh has been reported (Covello & Campa 1960; Dhalla *et al.* 1961). However information on the alkaloids present in aswagandh grown in Tamil Nadu is very meagre. Estimation of the alkaloid content in the plant parts at different stages of growth would help in standardising the optimum stage of harvest for maximum recovery of withanolides.

The study was undertaken at the Horticultural Research Station, Yercaud, to estimate the total withanolides in different plant parts of a promising aswagandh accession, Yercaud WS-1 at different stages of its growth. The plants were harvested at three different stages namely, 5, 6 and 7 months after sowing for estimation and three plant parts namely, leaves, stem and roots were analysed for total withanolides. The trial was conducted in a Factorial Randomised Block Design with four replications. The total withanolides available in leaves, stem and roots were estimated by the colorimetric method

(Mishra 1994.).

The various growth stages significantly influenced the total withanolides content in the plant. Six month old plants recorded the highest overall mean of total withanolides content of 0.61%. Among the different plant parts, roots registered the highest amount of withanolides (0.30%) followed by leaves (0.15%) and stems (0.08%). The interaction between growth stages and plant parts was also significant. In the second stage (harvesting the plant 6 months after sowing), the roots possessed the highest amount of withanolides (0.36%) and it was followed by harvesting roots after 7 months. The same trend was also observed with regard to stem and leaf portions of the plants (Table 1). From the study it is evident that roots contained more withanolides and harvesting of the plant at 6 months stage is recommended for extraction of maximum alkaloids.

### References

- Covello M & Campa G 1960 Paper chromatography of *Withania somnifera* alkaloid. J. Chrom. 3 : 591-592.
- Dhalla N, Shastry S & Malhotra C L 1961 Chemical studies of the leaves of *Withania somnifera*. J. Phar. Sci. 50 : 876-877.
- Mishra S N 1994 Colorimetric method for estimation of total withanolides

**Table 1.** Effect of plant parts and stage of harvest on withanolides recovery in aswagandh

| Plant part          | Total withanolides (%) |          |          | Mean |
|---------------------|------------------------|----------|----------|------|
|                     | 5 months               | 6 months | 7 months |      |
| Leaf                | 0.10                   | 0.15     | 0.12     | 0.15 |
| Stem                | 0.06                   | 0.10     | 0.08     | 0.08 |
| Root                | 0.24                   | 0.36     | 0.30     | 0.30 |
| Total content       | 0.40                   | 0.61     | 0.50     |      |
|                     | SED                    | CD       |          |      |
| Stages (S)          | 0.009                  | 0.02**   |          |      |
| Plants (P)          | 0.010                  | 0.02**   |          |      |
| Interaction (S x P) | 0.005                  | 0.01*    |          |      |

(steroidal lactones) from the leaf of *Withania somnifera*. Proceedings, All India Workshop on Medicinal Plants, Kerala Agricultural University, Trichur.

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