



AMINO ACIDS CONTENTS OF THE PROTEIN OF THE ANTHELMINTIC PLANT *MAESA INDICA* WALL

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ABSTRACT

The present communication deals with the identification of various amino acids present in the protein of the roots of the plant *Maesa indica* wall. Their presence was confirmed by paper chromatography using authentic samples. The following amino acids were found present, in the percentages shown against each; Aspartic acid 6.40%, glycine 4.80%, serine 5.08%, alanine 7.36%, proline 24.32%, glutamic acid 3.20%, valine 8.00%, leucine 15.00%, cystine 10.24%, lysine 5.12% and arginine 9.92%.

Key words: *Maesa indica*, Roots, Paper chromatography, Amino acids, Spectrophotometric analysis, root protein.

INTRODUCTION

Maesa indica wall¹ is generally known as Nagapadhera in Kumano, kiriti in Malyslam and atki in marathi, belongs to natural order myrsinaceae. Various parts of this plant are reported to be used as anthelmintic, for curing syphilis and as antidote to fish poison. The plant is found to be distributed throughout India up to 6000 feet and in North Eastern Himalaya, East Bengal and Darjeeling district of the country.

EXPERIMENTAL

The roots of the plant *Maesa indica*; wall were collected from reputed herb supplier and authenticated by the well known taxonomist of this region.

Extraction of protein

About 150 g of air dried, powdered and defatted roots of *Maesa indica* wall were

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macerated with 300 mL of brine solution at room temperature in a 500 mL beaker. The extract was centrifuged and supernatant liquid was decanted. This process of maceration and decantation was repeated till negative biuret test.

The supernatant liquid was combined and 7 N HCl was added to it, when protein precipitated out which was centrifuged to get crude protein. 150 mg of the isolated protein was subjected to hydrolysis by refluxing it with 150 mL of 7 N HCl for 30 hrs. at 110°C. The solution was decolourised by treating with animal charcoal and hydrolysate was dissolved in 50 mL of water and subjected to ascending paper chromatography.

Chromatography

The spot of concentrated extract was applied on Whatman filter paper No. 1 with the help of a fine capillary and chromatogram was developed by ascending technique in the solvent system; n-butanol-acetic acid-water (4 : 1 : 5).

The developed chromatogram was air dried, then sprayed with nihydrin in 95% butanol and heated for 15 minutes in an air oven to develop the colour (spot). The R_f values are recorded in the Table 1. The identity of various amino acids were also confirmed by co-chromatography^{2,3} with authentic samples. The observation and results are reported in Table 1.

Table 1: Solvent system : n-Butanol-acetic acid-water (4 : 1 : 5 v/v); spraying reagent-nihydrin

S. No.	Amino acid	R_f found	R_f reported
1	Cystine	0.03	0.03
2	Lysine	0.11	0.12
3	Aspartic acid	0.13	0.14
4	Serine	0.17	0.18
5	Glycine	0.20	0.21
6	Proline	0.32	0.30
7	Valine	0.36	0.37
8	Arginine	0.38	0.39
9	Glutamic acid	0.48	0.50
10	Alanine	0.58	0.60
11	Leucine	0.60	0.61

Estimation of amino acids

Standard solution of glycine 0.10%, 0.20% and 0.30% in 10% isopropanol were prepared and their spot were applied on Whatman No. 1 filter paper. Subsequently, these were developed in n-butanol : acetic acid : water (4 : 1 : 5). The paper was sprayed with nihydrin and in 95% butanol, the spots were eluted with 5 mL of 10% isopropanol. The optical densities of standard solution were measured at λ_{max} 250 nm and a graph was plotted between optical densities and concentration. From this graph, the concentration of the amino acids present in the roots the *Maesa indica* wall were obtained⁴⁻⁶. The observation and results are recorded in the Table 2.

Table 2: Solvent system n-butanol-acetic acid-water (4 : 1 : 5 v/v) spraying reagent-nihydrin

S. No.	Amino acid	Optical density	Conc. of amino acid	Calc. % of amino acid
1	Aspartic acid	0.20	0.020	6.40
2	Glycine	0.14	0.014	4.80
3	Serine	0.15	0.015	5.08
4	Alanine	0.23	0.023	7.36
5	Proline	0.76	0.076	24.32
6	Glutamic acid	0.10	0.001	3.20
7	Valine	0.26	0.025	8.00
8	Leucine	0.50	0.050	15.00
9	Cystine	0.32	0.032	10.24
10	Lysine	0.16	0.016	5.12
11	Arginine	0.31	0.031	9.92

RESULTS AND DISCUSSION

Systematic examination of the observations in Tables 1 and 2 led to the conclusion that the protein of the roots of the anthelmintic plant *Maesa indica* wall has the amino acids composition as; aspartic acid 6.40%, glycine 5.08%, serine 4.80%, alanine 7.36%, proline 24.32%, glutamic acid 3.20%, valine 8.00%, leucine 15.00%, cystine 10.24%, lysine 5.12% and arginine 9.92%.

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