

## Amino acid composition of the total thalli of two *Laurencia* species at different habitats

P. M. SIVALINGAM

*School of Biological Sciences, Universiti Sains Malaysia  
Pulau Pinang, MALAYSIA*

SIVALINGAM, P. M. 1980. Amino acid composition of the total thalli of two *Laurencia* species at different habitats. Jap. J. Phycol. 28: 29-30.

Both *Laurencia* species are devoid of the amino acids of cysteic acid and tryptophan. The ratio of the composition of the various amino acids in the two species are as follows: *Laurencia* sp. 1; Asp>Glu>Lys>Thy>Val>Leu>Ala>Gly>Thr>Ser>Arg>Ileu>Pro>Phe>His>Met, *Laurencia* sp. 2; Asp>Glu>Lys>Ala>Leu>Val>Pro>Gly>Thy>Arg>Ser>Thr>Ileu>Phe>His>Met. Further, it was found that the percentages of all the amino acids in both species are not of comparative levels but identical in pattern.

*Key Index Words:* Amino acid composition, *Laurencia*, *Rhodophyta*.

The existence and distribution in Penang Island of 3 species of the Cyanophyceae, 21 species of the Rhodophyceae, 8 species of the Phaeophyceae and 12 species of the Chlorophyceae has already been reported by SIVALINGAM (1977). Among these reported species two species of *Laurencia*, viz. *Laurencia* sp. 1 (= *L. glandulifera* KÜTZING ?) and *Laurencia* sp. 2 (= *L. pin-nata* YAMADA ?) thriving at the higher tidal level zone and the lower tidal level zone, respectively, is intriguing at least in this tropical region. In this regard, the biochemical, physiological and morphological differentiation of both species have already been reported by SIVALINGAM *et al.* (1979), where the crude protein content of *Laurencia* sp. 1 and 2 was reported to be 15.6 and 10.5%, respectively.

Notwithstanding the foregoing, and in order to amplify this point of differentiation, the author compared the amino acid composition of both species. This paper presents the results of this investigation.

### Materials and Methods

*Laurencia* sp. 1 and 2 were harvested

during low tides at Batu Ferringhi in April 1979, brought back to the laboratory where epiphytes and contaminants were completely culled off and the thalli were washed with distilled water. The cleaned thalli were then dried at 105°C in an air-oven for ca. 72 hours before pulverization in a mortar.

Exact known amounts (5 mg) of both dried algal thalli were hydrolyzed in 6N HCl containing a small amount of phenol at 110°C for 20 hours. After hydrolysis the HCl was removed in vacuo over solid NaOH. The residual syrup was dissolved in 3 ml of 0.01 M citrate buffer pH 2.2 and 0.5 ml and 0.3 ml aliquots were each analysed for basic and acidic and neutral amino acid with a JEOL-JLC-5AH Automatic Amino Acid Analyzer. Average values from both the analysis were used as the data.

### Results

Table 1 shows the composition of the different amino acids in *Laurencia* sp. 1 and 2. It is noticeable that amino acid composition of both *Laurencia* sp. are quite similar in amount and that Cys (acid) and

Table 1. Amino acids composition of the two *Laurencia* sp.

Amino acids	Percentage of amino acids	
	<i>Laurencia</i> sp. 1	<i>Laurencia</i> sp. 2
Asp	11.62	13.49
Thr	5.89	4.60
Ser	5.80	5.02
Glu	11.14	12.38
Pro	4.41	6.49
Gly	6.08	6.32
Ala	6.56	7.42
Val	7.37	6.64
Ileu	4.62	4.56
Leu	6.90	6.81
Thy	8.45	5.83
Phe	3.78	4.55
Met	0.45	0.26
His	2.23	1.68
Lys	9.17	8.44
Arg	5.53	5.51
Cys-acid	—	—
Trp	—	—

Trp are absent in both species.

### Discussion

It is obvious from the results that the amino acid composition in *Laurencia* sp. 1, from the higher tidal zone, and *Laurencia* sp. 2, from the lower tidal zone, are almost the same in proportion. Taking this into

account, it is possible to envisage that though basically the amino acid composition of both *Laurencia* species are quite identical they differ in their contents possibly due to the fact of their prevalence in different environmental niches and existence of metabolic variations within them.

Hence, based on the foregoing results it is possible to differentiate both *Laurencia* sp. existent in Penang Island in relation to their amino acid composition.

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### References

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### P. M. シバリンガム：生育地の異なるソゾ属2種葉体のアミノ酸組成

マレーシアのペナン島に産するソゾ属2種はシスチン酸とトリプトファンを欠く。この2種のアミノ酸組成の比は *Laurencia* sp. 1 では Asp>Glu>Lys>Thy>Val>Leu>Ala>Gly>Thr>Ser>Arg>Ileu>Pro>Phe>His>Met であり、*Laurencia* sp. 2 では Asp>Glu>Lys>Ala>Leu>Val>Pro>Gly>Thy>Arg>Ser>Thr>Ileu>Phe>His>Met である。アミノ酸量はこの2種で異なるが、パターンは同様である (School of Biological Sciences, Universiti Sains Malaysia, Pulau Pinang, Malaysia)