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5-HYDROXY-L-TRYPTOPHAN; TAXONOMIC CHARACTER AND CHEMICAL DEFENCE IN *GRIFFONIA*

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The seeds of *Griffonia* (*Bandeiraea*) *simplicifolia* (Val ex DC.), a West African legume used in native medicine [1], have been reported [2, 3] to contain high concentrations of 5-hydroxy-L-tryptophan (5-HTP). It has been argued that the accumulation of this amino acid like the accumulation of 3,4-dihydroxy-L-phenylalanine (L-DOPA) in seeds of *Mucuna* species may protect the seeds from insect predation [4], and both the ground seed of *G. simplicifolia* and 5-hydroxy-L-tryptophan itself have proved to be extremely toxic to the larvae of *Prodenia eridania* (the southern army worm) [5] and the larvae of *Callosobruchus maculatus* (the southern cow pea weevil) [6].

In studying the distribution of L-DOPA in *Mucuna* it was possible to obtain seeds of six different species of the genus and show that all of these (but none from other genera examined) accumulated the amino acid at uniformly high levels (6–9% dry wt.) [4]. This finding supported the view that the role of L-DOPA in *Mucuna* seeds is a protective one. No such comparison was possible with *Griffonia* however as only one species of the four described in this small genus was available at the time of the original work and no other 5-HTP accumulating species were found in related genera.

We now report that a few seeds of *G. physocarpa* Baill. (*Bandeiraea tenuiflora* Benth.) from Gabon and of *G. speciosa* (Welw. ex Benth.) Taub. collected in Zaire in 1958 and preserved at the Royal Botanic Gardens, Kew, have been made available to us. The seeds of both these species also contain high concentrations of 5-HTP. On analysis (colorimetrically [7] and by amino acid analyser), 20 individual seeds of *G. simplicifolia* collected in Nigeria gave a mean value of 14.0% ± 0.24 of 5-HTP (calculated on dry seed weight). This uniformly high value is consistent with the view that 5-HTP has a protective role in the seed.

In analysing seeds representing over 250 other genera of the Leguminosae we have failed to find any other species that accumulates 5-HTP, and it is clear that the accumulation of 5-HTP is restricted to a very small number of plant species and may in all probability be a unique biochemical characteristic of this one tropical genus.

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