

## SHORT COMMUNICATION

### $\beta$ -SITOSTEROL IN *GINKGO BILOBA* LEAVES\*

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THE FOSSIL record of the ginkgo or maidenhair tree indicates little morphological change for the last 180 million years. It is so different from any other living tree that it must be classed as a different order.<sup>1</sup> Ginkgo leaves have been examined for their fatty acid composition<sup>2</sup> and a series of compounds called ginkgolides.<sup>3</sup> The sterols were isolated but not identified.<sup>4</sup>

The non-saponifiable fraction of ginkgo leaf lipids was crystallized from alcohol-acetone and ethyl acetate to yield  $\beta$ -sitosterol (m.p., mxd. m.p., GLC, i.r.). A trace of stigmasterol (GLC) was the only other sterol detected.

$\beta$ -Sitosterol is ubiquitous in the leafy tissues of higher plants. Its isolation from this ancient plant indicates that the pathways for its biosynthesis may be at least 180 million years old. An alternate hypothesis, however, would be that biochemical evolution can occur without gross morphological change as evidenced by fossil records.

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<sup>1</sup> W. DALLIMORE and A. B. JACKSON, as revised by S. G. HARRISON, *A Handbook of Coniferae and Ginkgoaceae*, Edward Arnold, London (1966).

<sup>2</sup> J. GELLERMAN and H. SCHLENK, *Experientia* **19**, 522 (1963).

<sup>3</sup> R. T. MAJOR, *Science* **157**, 1270 (1967).

<sup>4</sup> A. SOSA, *Bull. Soc. Chem. Biol.* **29**, 833 (1947).