

*Commentary*

## Some remarks on the hypothesis 'Mechanism of auxin-induced plant cell elongation' published by A. Brummer and W. Parish

Horst Göring

*Humboldt University, Department of Plant Physiology, Invalidenstrasse 42, 1040 Berlin, GDR*

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The authors of the above cited paper [1] claimed in their working hypothesis that 'The central effect of auxins in inducing extension growth in plant cells is to lower the cytoplasmic pH'.

Not surprisingly, we agree with the main point regarding cytoplasmatic pH ( $\text{pH}_c$ ) and with many arguments of the authors. It has to be mentioned, however, that the hypothesis itself and also most of the arguments which support the hypothesis are not new at all. On the basis of our results on IAA- and stress-induced ethylene production in wheat coleoptile segments it was suggested by Göring and Zoglauer in 1979 [2] that the acidification of the cytoplasm is the auxin effect before wall acidification. In the discussion of this paper this hypothesis was developed in detail.

The idea of involvement of metabolic processes in the primary reaction chain of plant responses to auxin, especially the involvement of regulation of  $\text{pH}_c$ , was presented by Göring and Bleiss at the International Workshop on Plasmalemma and Tonoplast of Plant Cells held in Strasbourg, September 8–11, 1981 [3]. In this paper the differences in plant responses to auxin and fusicoccin (FC) were also discussed. Among other responses we stressed the membrane depolarization effect of exogenously applied auxin which was studied with corn and wheat coleoptile segments [4]. In the above-mentioned paper [3] we referred to a more detailed publication [5] dealing with our hypothesis on the involvement of  $\text{pH}_c$  regulation in plant responses to auxin.

Additionally we published two papers in Russian concerning this topic (summaries in English) [6,7]. In the first paper, acid- and auxin-induced growth in plant cells was discussed on the basis of our own experimental data [6], in the other the regulation of  $\text{pH}_c$  and its role in growth and developmental processes in plants were reviewed [7].

It can be concluded that the ideas published in the paper of Brummer and Parish and presented as a new hypothesis were published in earlier papers, some of them in easily available journals.

### REFERENCES

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- [7] Göring, H. (1981) in: *Selfregulation of Plant Metabolism* (Georgiev, G. et al. eds) c/o Jusantov, Sofia.