

Effects of Watersoluble Boron and Aluminium Compounds on the Synthesis of Flavanols in Grape Vine Callus

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Dedicated to Professor Hans-Ludwig Schmidt at the occasion of his 70th birthday

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Internode explants of grape vine were used to produce proliferating callus cells *in vitro*. The tissues were grown on a modified M/S – medium supplemented with different concentrations of boron (H_3BO_3) in the range of 0 to 600 μM and aluminium ($AlCl_3$) in the range of 0 to 85 μM . With increasing concentrations of boron the content of the following flavanols declined: procyanidin B3 (catechin-(4 α → 8) catechin), procyanidin B1 (epicatechin-(4 β → 8) catechin), procyanidin B2 (epicatechin-(4 β → 8) epicatechin), and B2–3-O-gallate, catechin and epicatechin. ECG (epicatechingallate) showed increased values in dependence on boron supply. Procyanidin B5 (epicatechin-(4 β → 6)-epicatechin) showed an indifferent behaviour. In the case of aluminium the concentrations of flavanols were generally increased up to a maximum of 46% with the exception of ECG and B5 where no significant change was observed. While the total sum of flavanols was decreased by boron up to about 30% in comparison to the control (no boron addition) the content of flavanols was basically increased by aluminium up to about 25%. We conclude that the addition of watersoluble boron and aluminium compounds to the culture can significantly modify the synthesis of special monomeric and oligomeric flavanols.