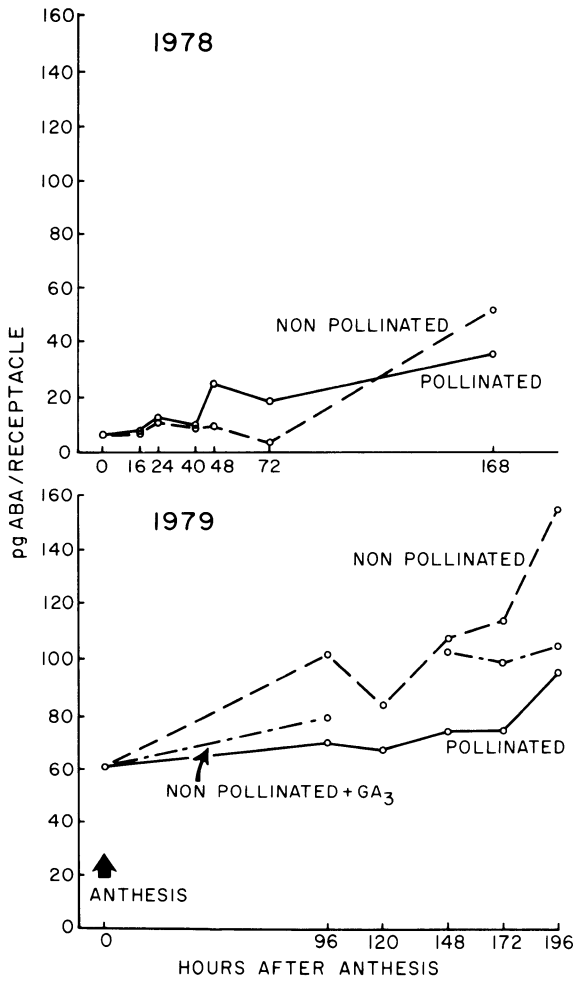

Fig. 2. Effects of pollination and GA_3-treatment at anthesis on ABA concentration in pear receptacles, 1978 and 1979.

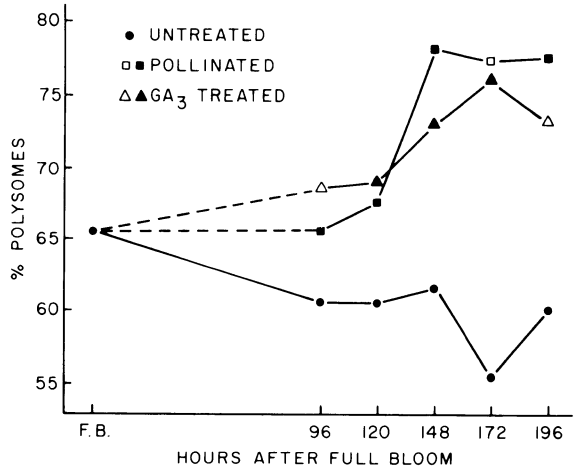

Fig. 4. Effects of pollination and GA_3-treatment at anthesis on changes in percent polysomes in the ribosomal fraction extracted from 'Winter Nelis' pear receptacles (1979). Control (●), pollinated (■), GA_3-treated (▲). Duplicate or triplicate extractions were made for each data point. Range for each point was < ± 3.5 units (% polysome) except for those indicated by open symbols (□, △) where the range was < 10 units.

to abscise contained greater concentrations of ABA (Fig. 2), as expected from previous work (1, 18). Data for the GA_3 treatment in 1979 at 120 hr were lost because of a laboratory accident.

Ribosomes were isolated as indicators of protein synthesis in the receptacle. Increases in polysomes, representing increased initiation (attachment) or ribosomes of mRNA and/or increases in available mRNA, provide an index to increased protein synthesis without resort to the use of radioactive precursors and attendant limitations (9). Typical density gradient distribution profiles of ribosomes isolated from pear receptacles are shown in Fig. 3, along with the corresponding percentage of polyribosomes.

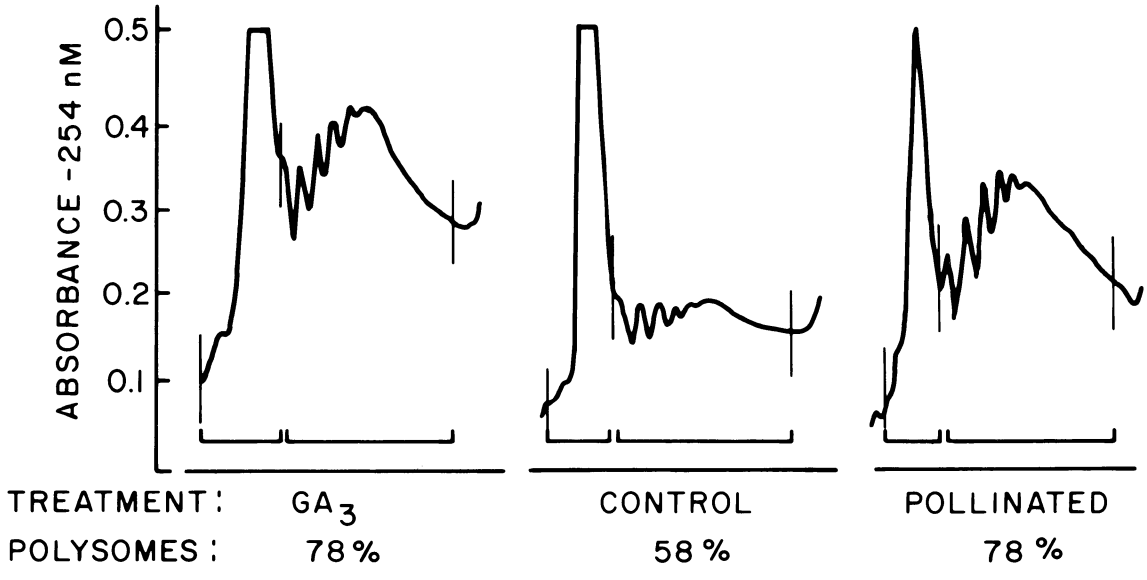

Fig. 3. Effects of pollination and GA_3-treatment at anthesis on sucrose density gradient profiles of ribosomes extracted from 'Winter Nelis' pear receptacle tissue 196 hours after anthesis (1979). Lines demark the portions collected for quantitative estimates of monosomes and polysomes.

In 1978, there were no significant differences in the percent polysomes of pollinated and unpollinated receptacles during the first 72 hr after anthesis. Only in the final sampling at 168 hr was there an indication that the percentage of polysomes in pollinated receptacles had begun to increase, whereas that from the unpollinated receptacles declined.

In 1979, polysomal yield had increased slightly 96 hr after pollination or spraying with GA_3 and markedly after 148 hr (Fig. 4). The differences between pollinated and GA_3-treated receptacles were slight.

With some assumptions and approximations, one can estimate the relative levels of mRNA present by dividing the area under each density profile peak by the number or ribosomes represented, i.e., dimer, trimer, etc. (3). Without resort to detailed analyses it can be seen from the significant rise in absorbancy at the hexamer and heptamer regions of ribosomal profile of the GA_3-treated and pollinated fruit (Fig. 3) that notable increases in active mRNA and hence in *in vivo* protein synthesis appeared to have taken place.

A burst in protein synthesis occurred 120 to 148 hr after pollination or treatment with GA_3 (Fig. 4), a time roughly coincident with syngamy. Others (4, 5, 14) have observed a much earlier synthesis of RNA only a few hours after pollination or application of auxin, and our observations do not preclude such a burst. What remains to be resolved is the temporal relationship between RNA synthesis, which we did not measure, and *in vivo* protein synthesis, which was not assessed in the studies cited above.

In this context, the coincidence between the effects of GA_3 and pollination are noteworthy. If, as it appears (Fig. 4), syngamy induces protein synthesis and "set," then GA_3 must trigger a similar "signal" whose temporal-spatial progress is, perhaps fortuitously, coincident with pollen tube growth. In any event, processes which predispose 'Winter Nelis' receptacles to either set or abscise are most clearly discerned after the time interval normally required for fertilization even in non-fertilized, GA_3-treated flowers.

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