Short Communication

Increase in Percentage of Gibberellin-induced Dark Germination of Tobacco Seeds by N-compounds.

by Tohru HASHIMOTO*

橋本 徹*: ジベレリンによっておこるタバコ種子の暗発芽におよぼす窒素化合物の影響

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It was reported by Ogawara and Ono that gibberellin induced the germination of tobacco seeds without exposure to light²⁾. We have found that this effect of gibberellin is largely intensified by N-compounds.

Seeds of *Nicotiana Tabacum* L., "Bright Yellow", obtained at Tateyama (Chiba) were studied. These ordinarily require light exposure for germination. Effects of potassium nitrate and ammonium nitrate on the germination of the seeds were observed in the presence or absence of gibberellin. Tested concentrations of gibberellin (gibberellic acid and gibberellin A mixture) and N-compounds are 30 p.p.m. and 0.02 M, respectively. Two layers of filter paper were placed in each petri dish and soaked with the solutions mentioned in Table 1. About 150 seeds were sown in each of these petri dishes, were kept at 25° in total darkness for seven days to allow seeds to germinate, and percentages of germination were determined.

Table 1. Percentage of germination of tobacco seeds.

Solution	water	Gib.	KNO ₃	Gib.+KNO ₃	NH ₄ NO ₃	Gib.+NH ₄ NO ₃
lot 1	0	8.5	3.2	55	4.5	53
lot 2	0	13	1.6	56	7.6	43

As shown in Table 1, gibberellin induces the germination of tobacco seeds without light exposure, and this effect of gibberellin is intensified to a large extent by the addition of potassium nitrate and ammonium nitrate.

Ogawara and Ono reported previously that the effect of light on tobacco seed germination was larger in the presence than in the absence of N-compounds including potassium nitrate and ammonium nitrate¹⁾. According to the present study these N-compounds increase the rate of gibberellin-induced seed germination, too. This suggests that N-compounds accelerate the physiological steps which can be influenced

* Biological Institute, College of General Education, University of Tokyo, Meguro, Tokyo, Japan. 東京大学教養学部生物学教室

Table 2. Percentage of germination of tobacco seeds.

N-Compound concn. (Mol)		Gib. concn. (p.p.m.)					
		0	0.3	1.0	3	10	30
KNO ₃	0	1.7	3.6	2.8	10.1	9.9	40.2
	0.04	1.6	2.5	3.0	5.4	20.0	66.5
	0.08	4.1	4.9	4.9	7.8	30.9	68.8
NH ₄ NO ₃	0	2.9	3.3	1.9	4.3	12.2	58.1
	0.04	3.0	7.1	3.7	43.3	77.0	79.6
	0.08	4.9	36.3	38.3	70.6	77.9	78.7

by light or gibberellin.

Table 2, obtained by another series of experiments, reveals that by treating tobacco seeds with gibberellin in the presence of N-compounds, the effect of even very small amounts of gibberellin can be detected.

References

1) Ogawara, K. and Ono, K., Bull. Sch. Educ. Okayama Univ. 1. 97 (1955). 2) ———, and ———, Japanese Gibberellin Research Association, First Symposium on Gibberellin Research in Japan (1957).