**On Colchicine-Induced Polyploid *Lobelia* (*L. inflata* Linn)
with Special Reference to the Content of Alkaloids.**

Since 1937, when Blakeslee and Avery discovered a chromosome-doubling action of colchicine, a great number of papers on polyploid plants induced by the same have been published. Polyploid plants, however, are known generally to become larger in size as compared with the diploid, but as to the content of chemical ingredients in relation to polyploid relatively few works have been published.

The writers brought up polyploid plants of *L. inflata* Linn. by treatment with colchicine in 1948, and the plants were cultivated in the successive two years. The chromosome-numbers of diploid ($2x$) ($n=7$) and of tetraploid ($4x$) plants ($n=14$) were determined by two (Kawatani & Ohno) of the writers in July, 1948, and were examined for confirmation the next year.

Table I. Dimensions of stomata and pollen grains of diploid
and tetraploid *Lobelia* (27/VIII 1948)

Sorts	Stomata			Pollen grains		
	Length (μ)	Width (μ)	No. of measurements	Length (μ)	Width (μ)	No. of measurements
L _c $2x$	33.7 ± 0.34	16.3 ± 0.30	40	35.8 ± 0.12	19.1 ± 0.20	40
L ₁₀ $4x$	36.7 ± 0.36	22.8 ± 0.25	40	41.3 ± 0.34	23.4 ± 0.43	40
L ₁₇ $4x$	37.8 ± 0.30	23.5 ± 0.30	40	41.0 ± 0.28	22.1 ± 0.23	40

Table II Dimensions of cotyledons of diploid and tetraploid *Lobelia* (12/V 1949)

Sorts	Length (mm)	Width (mm)	No. of measurements
L _c $2x$	0.75 ± 0.007	0.63 ± 0.008	40
L ₁₀ $4x$	1.36 ± 0.027	1.09 ± 0.026	40

Table III Dimensions of leaves of diploid and tetraploid *Lobelia* (18/VIII 1949, 2/IX 1950)

Sorts	Year	Length (cm)	Width (cm)	No. of measurements	Width/Length
L _c $2x$	1949	5.0 ± 0.18	2.6 ± 0.08	40	0.52 ± 0.025
L ₁₀ $4x$	1949	5.3 ± 0.10	3.9 ± 0.06	40	0.74 ± 0.018
L _c $2x$	1950	2.2 ± 0.04	1.2 ± 0.02	40	0.55 ± 0.014
L ₁₀ $4x$	1950	3.8 ± 0.12	2.6 ± 0.09	40	0.68 ± 0.031
L ₁₇ $4x$	1950	2.9 ± 0.07	2.2 ± 0.05	40	0.76 ± 0.025

The results of morphological investigations are shown in Tables I, II and III. Stomata, pollen grains, cotyledons, and leaves of the tetraploid plants are larger in size as compared with the diploid. Leaves of the tetraploid plants are also larger in thickness, darker in color, and more rounded as compared with the diploid. As to the height of the plants, there was not recognizable difference between the two. As to the weight, the tetraploid plants were not lighter than the diploid.

The content of total alkaloids of the diploid and tetraploid plants harvested in 1950 was determined by the following method. Three g. of the coarse ground powder of the dried whole plant (over-ground part) was extracted for 1.5 hrs. with 30 cc. of ether and 3 cc. of 10% ammonia water, using the Soxhlet extractor. Ether was removed from the extract solution over a water bath, 10 cc. of

ether added to the residue and shaken well with 30 cc. of hydrochloric acid solution (1 : 99 mixture of 38% HCl and water). Ether was evaporated and the acid solution filtered to remove the chlorophyll. To this filtrate was added 20 cc. of ether, alkalinized with 10% ammonia water, shaken in a separatory funnel and ether layer separated. Ether layer was dehydrated by the addition of a small amount of tragacanth powder, filtered and ether removed by distillation. To the residue were added 5 cc. of alcohol, 5 cc. of N/20 HCl and 5 cc. of water, and the mixture was titrated with N/20 KOH, using methyl red as the indicator. The amount of the total alkaloids was calculated from the following formula where a denotes the amount in cc. of N/20 KOH required for neutralization and b, the amount in g. of the sample taken :
$$\frac{0.01686 \times (5 \times (F)_{\text{HCl}} - a \times (F)_{\text{KOH}})}{b} = x\%.$$

Table IV The content of total alkaloids of diploid and tetraploid
Lobelia harvested on Sept. 4, 1950 (30/IX 1950)

Sorts	Content (%)	No. of analyses	Index No.
L _c 2x	0.133±0.001	3	100
L ₁₀ 4x	0.278±0.003	3	209
L ₁₇ 4x	0.269±0.009	3	202

The results of analyses are shown in Table IV. The content of total alkaloids in the tetraploid plants was distinctly almost twice as much as that of the diploid. There was no recognizable difference between the tetraploid L₁₀ and L₁₇.

These facts are very interesting and show a probability of practical cultivation of tetraploid Lobelia.

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記 事

○年会準備委員会 6月18日午後1時半, 東大医学部本館会議室にて開催し, 年会実施の細目につき打合せを行った。

○編集委員会 6月5日午後2時, 東大薬学科にて開催, 8月号原稿を決定し到着原稿を審議した。

— 会 員 学 位 審 査 —

本会々員福地言一郎氏の学位論文は, 東京大学医学部教授会に於て審査の結果, 教授会を通過した。

福地言一郎 (三共株式会社学術研究部長兼高峰研究所長) 「利尿生薬成分中の Kaempferol 配糖体及び Luteolin 配糖体について」

— 会 員 異 動 —

本会々員一色孝氏, 岡本敏彦氏は東京大学助教授 (医学部薬学科) に任ぜられた。