viously reported for bone marrow homogenates (*1*). Active protein and nucleic acid synthesis also appeared to take place in these spleen homogenates.

The results reported here indicate that hemin synthesis can be carried out by rabbit spleen homogenates utilizing the methylene carbon atom of glycine as a precursor. Experiments are now in progress to assess the biological significance of these findings.

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Effect of 2,4-Dichlorophenoxyacetic Acid on the Alpha and Beta Amylase Activity in the Stems and Leaves of Red Kidney Bean Plants[1]

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Recent work (*2, 4, 5, 7, 8*) has shown that treatment of plants with 2,4-dichlorophenoxyacetic acid (2,4-D) results in a reduction of carbohydrates and an accumulation of nitrogen. Since minute quantities of 2,4-D produce these marked changes in the chemical composition of the plants, it is indicated that the enzyme system might be involved. The purpose of this communication is to report the effect of 2,4-D on the alpha and beta amylase activity in the stem and leaf tissue of red kidney bean plants.

Seeds of red kidney bean plants were selected for uniformity of size and planted in 4-in. pots in the greenhouse. Each pot contained two plants that were treated when the first trifoliate leaf was expanding. Four replications of 100 plants each were used from which to obtain material of treated and nontreated plants (controls). Application of 2,4-D was made by applying one drop (0.05 ml) of a 1000-ppm solution to the base of the blade of one of the primary leaves. The plants were harvested 6 days after treatment, at the time the stem tissue had proliferated considerably but yet showed no signs of necrosis. The plants were air-dried in the dark and then separated into the various parts. The hypocotyl, first internode, and leaf petioles were grouped together as stem tissue. Enzyme activity was determined separately on the stem and leaf tissue.

[1] Journal Article No. 1066, Michigan Agricultural Experiment Station, East Lansing.

TABLE 1

EFFECT OF 2,4-D ON ALPHA AND BETA AMYLASE ACTIVITY IN STEMS AND LEAVES OF RED KIDNEY BEAN PLANTS*

Enzyme	Replication	Stems		Leaves	
		non-treated	treated	non-treated	treated
Alpha amylase†	1	29.91	4.63	0	0
	2	31.90	4.90	0	0
	3	32.32	5.02	0	0
	4	33.20	5.23	0	0
	avg	31.83	4.95	0	0
Beta amylase‡	1	38.70	21.15	25.87	27.91
	2	33.40	25.99	26.20	26.90
	3	35.60	26.22	27.62	28.34
	4	38.60	22.34	25.62	26.34
	avg	36.58	23.93	26.33	27.37

* Each figure is the average of two determinations of each replication. Results are expressed on a dry weight basis.

† Expressed as the number of grams of soluble starch which under the influence of an excess of beta amylase are dextrinized by 1 g of tissue in 1 hr at 30° C.

‡ Expressed as number of grams of soluble starch converted to maltose by the beta amylase of 1 g of tissue in 1 hr at 30° C.

The alpha and beta amylase were determined according to the method of Kneen and Sandstedt (*1, 3, 6*). The data in Table 1 show that 2,4-D lowers considerably the activity of both the alpha and beta amylase in the stems of bean plants. No activity of alpha amylase was noted in leaves of the treated and nontreated plants. The results also show that treating leaves of the plants with 2,4-D had no effect on the beta amylase activity.

Further work is in progress on the effect of 2,4-D upon enzyme activity in various tissues of the plant.

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