

solution of Na_2CO_3 was added with shaking followed by 1 c.c. of amyl alcohol and 1 c.c. of distilled water. The green colour separated in the amyl-alcohol layer and could be evaluated in a Lovibond Tintometer.

(ii) Procedure for water-soluble derivatives (*Synkamin and Synkanit*): 0.5 to 0.15 mgm. of the substance dissolved in 0.5 c.c. of water was treated with 0.1 c.c. of the reagent and heated in a water-bath at 70°C . for about 3 minutes. It was next cooled and 0.3 c.c. of 20 per cent. sodium carbonate solution was added followed by 1 c.c. of amyl alcohol when the green colour separated in the amyl alcohol layer.

This reaction could be used to detect even 0.005 mgm. of the quinone, but a good working range for quantitative work would be 0.05 to 0.15 mgm. of the quinone.

Further work is in progress and a detailed report will be published elsewhere.

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1. Reddy, D. V. S., *Proc. Indian Sci. Cong.*, 1946, 87. 2. —, *Medical Digest*, 1945, 13, 239. 3. Noveile, *Sci.*, 1941, 93, 358.

INFLUENCE OF EXTRACTS OF GERMINATED INDIAN PULSES ON THE FORMATION OF AMYLASE BY *BACILLUS SUBTILIS*

RAGHAVENDRA RAO AND SREENIVASAYA¹ have shown the possibility of replacing the expensive asparagine, an ideal source of organic nitrogen for micro-organisms, by aqueous extracts of etiolated seedlings of certain Indian pulses that are rich in asparagine. The present work was carried out to determine the overall efficiency of these complex sources of nitrogen on the formations of amylase by *B. subtilis* (N.C.T.C.: 2027 N). The extracts were prepared at different periods of germination (4th, 6th and 8th day), and the results of their analysis were found to concur with those of previous workers.¹ These extracts have been tried,

TABLE I

Effect of germinated pulse extract on production of Amylase by *B. subtilis* with extract containing 0.5 mg. nitrogen per 10 ml.

| Days after commencement of germination | Enzyme Units per 10 ml. of medium | | | |
|-----------------------------------------------------|-----------------------------------|------------|-------------|------------|
| | Green gram | Black gram | Bengal gram | Horse gram |
| 4 | 7.5 | 8.6 | 7.9 | 6.0 |
| 6 | 9.0 | 12.0 | 11.4 | 8.2 |
| 8 | 18.0 | 15.0 | 23.7 | 12.0 |
| With extract containing 1.0 mg. nitrogen per 10 ml. | | | | |
| 4 | 9.2 | 10.5 | 10.0 | 9.5 |
| 6 | 12.8 | 18.0 | 19.8 | 14.8 |
| 8 | 20.0 | 21.6 | 30.0 | 22.2 |

by the method already described,² at two levels of nitrogen (0.5 and 1.0 mg. in 10 ml. of culture medium). The results are given in Table I.

The results show that, at both levels of nitrogen, the enzyme formed increases steadily with germination during the period of observation. The highest activity is obtained with the Bengal gram extract, both at 1.0 mg. and 0.5 mg. level of nitrogen.

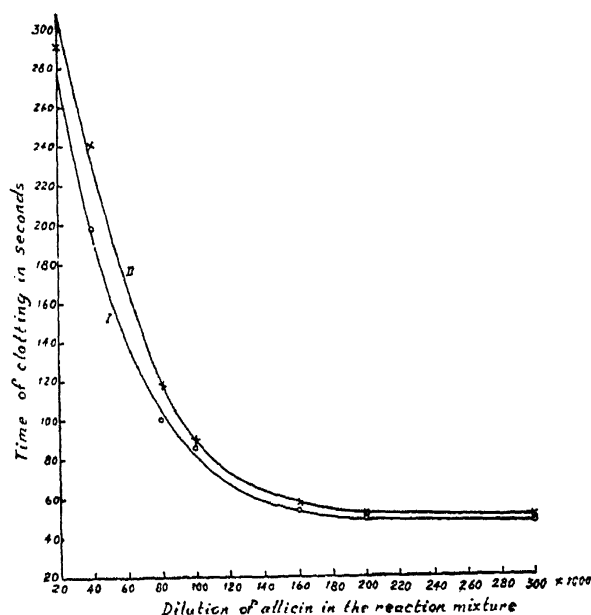
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1. Raghavendra Rao and Sreenivasaya, *Curr. Sci.*, 1946, 15, 25. 2. Lulla, B. S. (reference of the above paper), *Ibid.*, 1948, 17, 2.

EFFECT OF ANTIBIOTICS ON THE MILK-CLOTTING ENZYMES OF *CARICA PAPAYA* AND *FICUS CARICA*

SEVERAL instances of sulphhydryl groups inactivating anti-microbial agents have been recorded in literature.¹⁻⁶ This has led to the view that the majority of the antibiotics act possibly by reacting with the -SH groupings of enzyme systems in the bacteria. Activation studies using glutathione, cysteine and other thiol compounds, and reversible inhibition by copper and maleic acid support the evidence in favour of the -SH nature of papain⁷ and the milk-clotting enzyme of *Ficus carica*.⁸ In view of this, it was of interest to study the effect of antibiotics on these enzyme systems.



Curve I after 5 minutes incubation
Curve II after 15 minutes incubation

Different dilutions each of penicillin and alliin were mixed with each enzyme (1:1 v/v),