

**A STUDY OF THE INITIAL
VELOCITY IN
THE HYDROLYSIS OF
SUCROSE BY INVERTASE**

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A study of the initial velocity in the hydrolysis of sucrose by invertase by Harold Lester Simons

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HAROLD LESTER SIMONS

**A STUDY OF THE INITIAL
VELOCITY IN
THE HYDROLYSIS OF
SUCROSE BY INVERTASE**

**A Study of the Initial Velocity in the Hydrolysis
of Sucrose by Invertase.**

DISSERTATION

Submitted in Partial Fulfillment of the requirements
for the Degree of Doctor of Philosophy in
the Faculty of Pure Science of
Columbia University.

BY

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NEW YORK CITY

1921

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EXCHANGE

TO VMD
CALIFORNIA

TO MY
FATHER AND MOTHER

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CALIFORNIA

ABSTRACT OF DISSERTATION

1. What was attempted?
2. In how far were the attempts successful?
3. What contribution actually new to the science of Chemistry has been made?

1. In view of the fact that many investigators have extrapolated the initial portion of the curve representing the hydrolysis of sucrose by invertase by assuming that the function was initially linear and due to the importance of knowing the actual course of the inversion at its start, an attempt has been made to determine:

(a) Whether this condition actually exists;

(b) In the case of its actual existence, whether it is due to lack of sufficiently great experimental precision or is due to some peculiarity in the reaction.

2. It has been found that

(a) In general, the initial course of the curve representing the hydrolysis is linear;

(b) Under certain conditions, however, the velocity actually rises to a maximum;

(c) The observed linear part of the curve is due mainly to a peculiarity of the reaction.

3. It has been shown that

(a) By actual measurement the velocity of the inversion of sucrose by invertase is, in general, constant at the start. This is the usual case even in the presence of added substances. However, under certain conditions, the velocity has been observed to go through a maximum before the gradual decrease sets in;

(b) This constant or increasing velocity is only evident at the beginning of the hydrolysis;