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Natural Plant Enzyme Inhibitor Protease Inhibitor and Urease Activity in Cassia tora Linn. Seeds Used as Coffee Substitute

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Abstract—*Seeds of Casia tora (Tarota) were used by the tribal all over India as well used as coffee substitute in France. Africa and West Indies. Caffeine percentage was evaluated in Cassia tora seeds. It was found experimentally that seeds processes urease as well as trypsin inhibitor activity-making the seeds unfit for human consumption. Since the process of coffee making involves the roasting of Casia seeds. Hence the effect of temperature was also estimated and it was seen as the temperature was increased. The unrease activity of the seeds decreased considerably. Therefore, roasted Cassia seeds contain toxic constituents in very less quantity which can be consumed by Human Being in moderate amount.*

1. INTRODUCTION

Cassia tora, Linn belonging to Leguminoseae family is distributed throughout the India. Ceylon, and the tropics, probably native in Asia only,. Pods 5-8 by 1/6-1/5 inch. Subetragonous, much curved when young, obliquely septate, puberulous, the sutures very broad, Seeds 25-30, rhombohedra, with the long axis in the direction of the pod. The seeds of Cassia tora are used as substitute of coffee in the various part of France, African countries and Germany. These seeds are advocated to be rich source of protains Coffe substitutes and adulterants usually lacks xanthine alkaloids but contains compounds such as volatile oils that may impart pleasant flovors and stimulating effect are common in tropical and temperate places of the worldsuch as use of Cassia occidentals and Cassia tora which forms base of coffe [1]. However, their potential is still questioned due to growth inhibiting proteins that must be detoxified before they are consumed. Keeping growth inhibiting proteins that must be detoxified before they are consumed. Keeping this in view, the present research work was carried out to know the percentage of caffeine, presence of trypsin inhibitor activity, unrease activity and effect of temperature on the activity. The results are presented in this paper.

2. MATERIALS AND METHODS

Cassia tora seeds are collected from RTM, Nagpur University in their natural habitat. Seeds are taken out from the legume. These were cleaned and powdered by grinding to pass through sieve. This sample was used for study , Percentage of caffeine was estimated [2] Urease and Trypsin inhibitor activity of *Cassia tora* seed was estimated through spectrophotometer [3,4].

3. RESULTS AND DISSCISSION

Percentage of Caffeine in the seeds of Cassia tora was estimated to be 0.452%. The urease enzyme is present in various legumes. The seed coat and endosperm layer contain no urease, while the greater concentration is claimed in the outer epidermal layer of cotyledon [5] during germination the urease accumulates in embryo [6]. Urease activity of the seeds has been determined. The results of urease activity are reported in Table I and table II. Figure I shows that seeds of Cassia tora have urease activity and it decreases considerably by increasing the temperature from 100’c to 150’c. Figure II shows that the urease activity is reduced as the time is increased from 0-60 minutes; The sample was tested for the trypsin inhibitor activity. It was noted that the sample of Cassia tora seeds contain trypsin inhibitor substances, Trypsin is proteolytic enzyme which acts at pH 7.8, liberates fre tyrosine. Hence the trypsin inhibitor activity is estimated by finding out the amount of tyrosine liberated after 10 min.of incubation with casein. The results are given in table III. Sample of Cassia seeds was estimated to have 36.17 microgram of tyrosine per gram of sample which is close to the tyrosine content of controlled experiment which was 38.2 microgram per gram of sample.

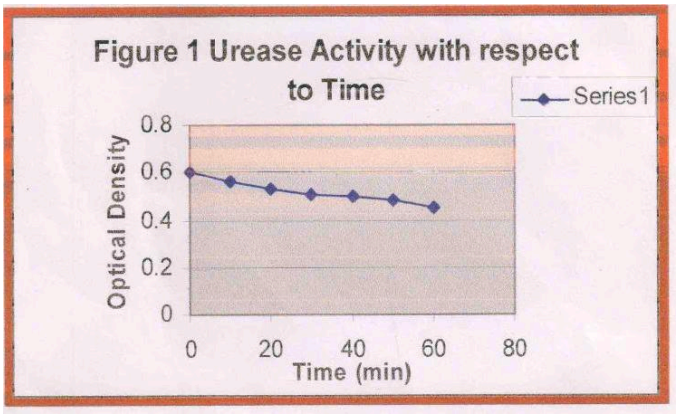
Table I: Showing urease activity with relation to time keeping the temperature constant that is 100’C.

S NO.	Time (min.)	Optical density
1	0	0.6
2	10	0.56
3	20	0.53
4	30	0.51

5	40	0.50
6	50	0.48
7	60	0.45

Table II: Showing effect of temperature on urease activity

S NO.	Temperature	Optical density
1	100	0.51
2	110	0.45
3	120	0.4
4	130	0.32
5	140	0.3
6	150	0.23



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