ANANAS COMOSUS;
A POSSIBLE TREATMENT OF ENDEMIC GOITER IN YOUNG UNMARRIED FEMALES.

Abdul Rehman Khokhar¹, Tanvir Ali Khan Shirwany², Muhammad Shahid Faruqi³, Qurrat-ul Aen Rehman⁴, Abdul Majeed Cheema⁵

ABSTRACT… Background: The Significant role of iodine as a remedy for endemic goiter is well known. But major problem is iodine loss due to sublimation. Ananas Comosus may be a good source of iodine. **Study Design:** Randomized controlled study. **Setting:** Department of Physiology, PGMI, Lahore in collaboration with DHQ teaching hospital D.G. Khan. **Period:** May to August 2017. **Materials and Methods:** Study objective was to measure the efficacy of fresh Ananas Comosus among young unmarried female with endemic goiter. Simple random sampling technique was applied. Seventy newly diagnosed cases of endemic goiter were selected by simple random sampling. 35 subjects were included in study group and 35 subjects were taken as control group. Dose of Ananas Comosus was standardized by P.C.S.I.R laboratories complex Lahore. Data Analysis was carried out by using SPSS version 16.0. For comparison of different groups, t-test was used **Results:** The baseline goiter size (mean + SD) of study group (n=29) and control group (n=30) was non-significantly different. After 8 weeks of intervention goiter size was highly significantly (P<0.001) reduced in study group. Mean serum TSH suppression was also significant. Serum T4 and T3 levels also showed improvement after 8 weeks of Ananas Comosus ingestion. **Conclusion:** Fresh Ananas Comosus can be used as therapeutic agent for endemic goiter patients.

Key words: Ananas Comosus, Endemic Goiter, Treatment, Iodine.
pineapple contains 4.1mg of iodine.\textsuperscript{11} Bromelain is a complex mixture of proteolytic enzymes. This is the basis for the medicinal use of pineapple.\textsuperscript{12} The study was undertaken to measure efficacy of Ananas Comosus (fresh pineapple) as therapeutic agent among unmarried females with endemic goiter.

**MATERIAL AND METHODS**

Seventy newly diagnosed cases of endemic goiter were selected by simple random sampling. 35 subjects were included in study group and 35 subjects were taken as control group. This randomized controlled study was carried out in the department of physiology, PGMI, Lahore in collaboration with DHQ teaching hospital D.G. Khan. Dose of Ananas comosus was standardized by P.C.S.I.R laboratories complex Lahore.\textsuperscript{13} This study includes young unmarried females of age 15-25 years who came to the hospital for the treatment of endemic goiter.

The study design was randomized clinical trial and simple random sampling technique was used for allocation into two groups.

Prior to initiation of the study, planned visit to homes of subjects were undertaken to explain the salient points of study and to obtain the written consent of the subjects. Subjects were advised not to consume foods/fruits and drugs having high iodine content.\textsuperscript{14} Subject suffering from thyrotoxicosis, bleeding disorder, diabetes myelitis, history of intake of goitrogenic foods and drugs which leads to goiter, solitary nodular goiter with history of pain and lymphadenopathy, history of intake of iodized salt were also excluded.\textsuperscript{15-19} Blood samples were taken at 0, 8 and 10 week from both groups for estimation of serum T\textsubscript{3}, T\textsubscript{4}, and TSH and goiter size were non- significantly different between the study and control group. Family history of goiter was positive in 71.28% of subjects. Only 14% of the subjects had knowledge about the iodized salt and they were not using it due to high cost and non availability at nearest shop. Goiter size was highly significantly reduced in study group and TSH suppression and normalization of serum T\textsubscript{3} and T\textsubscript{4} were noted after eight weeks of pineapple ingestion.

At end of treatment goiter size was highly significantly (P<0.001) reduced in the study group at eight weeks (0.93 ± 0.81). Two weeks post treatment goiter size remained reduced (2.44 ± 0.46) as compared with the control group (Table-I). This reduction was seen during the consumption of Ananas Comosus by the study group. It indicated that effect of pineapple ingestion was not persistent on goiter size reduction.

TSH levels were highly significantly reduced in study group at week eight (2.01 ± 1.03) as compared with control group (P<0.00). Two weeks after cessation of intervention TSH level was 2.16 ± 1.18 (p <0.00) among study group. It reflected that TSH levels suppression was persistent even after the cessation of pineapple ingestion at eight week.

Serum T\textsubscript{3} level at eight weeks were significantly different from its baseline value after pineapple ingestion but after cessation of ingestion of pineapple difference was not significant. Serum T\textsubscript{4} was significantly improved at eight weeks pineapple ingestion. While at ten week serum T\textsubscript{4} was not significantly different from its baseline in

**RESULTS**

Seventy unmarried female patients with newly diagnosed endemic goiter were randomized, and equally divided into study group and control group. Out of these eleven patients were lost during follow up. The study group finally consisted of 29 females and control groups consisted of 30 female patients. At baseline mean ± SD of age, T\textsubscript{3}, T\textsubscript{4}, TSH and goiter size were non- significantly different between the study and control group.

The study objective was to assess effect of Ananas Comosus among endemic goiter patients.

This study includes young unmarried females of age 15-25 years who came to the hospital for the treatment of endemic goiter.

The study design was randomized clinical trial and simple random sampling technique was used for allocation into two groups.

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the study group. Serum $T_3$ and $T_4$ values in the control group were non-significantly different at eight and ten weeks from its baseline value (Table-II).

<table>
<thead>
<tr>
<th>Time</th>
<th>Control Group (n=30)</th>
<th>Study Group (n=29)</th>
<th>P-value</th>
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<tr>
<td>Baseline</td>
<td>2.33 ± 1.24</td>
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<td>8 Weeks</td>
<td>2.71 ± 1.21</td>
<td>0.93 ± 0.81</td>
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<tr>
<td>10 Weeks</td>
<td>2.69 ± 1.66</td>
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Table-I. Comparison of goiter size and TSH levels between control and study group.

<table>
<thead>
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<th>P-value</th>
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<tr>
<td>Baseline</td>
<td>4.21±1.03</td>
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<td>8 Weeks</td>
<td>4.22±1.03</td>
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<tr>
<td>10 Weeks</td>
<td>4.21±1.15</td>
<td>2.16±1.18</td>
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Table-II. Comparison of $T_3$ and $T_4$ levels between control and study group.

DISCUSSION

Many patients with hypothyroidism seek medical advice due to goiter which causes cosmetic disfigurement of neck.20 Fresh pineapple ingestion found to produce improvement in hormonal thyroid status and reduced goiter size from its baseline after eight weeks.21 Many research studies have been carried out using chemical substances to study their effects on thyroid goiters. But evidently no such study appears to evaluate effects of fruits like pineapple and strawberries on goiters size. In this respect our study is a pioneer one.

Brenta G et al (2003) evaluated the therapeutic efficacy of levo-thyroxin (L-T4) and tri-iodothyroacatie acid (TRIAC) among 36 Caucasian women suffering from non toxic diffuse goiter. After randomization, therapeutic dose 50mg of L-T4 and 350 mg twice daily of TRIAC was given for eleven months. Goiter size reduced to 42% in TRIAC group and this study showed -50% reduction which was remarkable. In our study goiter size reduction was more with lesser duration of treatment as compared with findings of Brenta G et al (2003).22 In addition to goiter size reduction there was improvement in $T_3$, $T_4$ levels and highly significant TSH suppression (P<0.001).

Huysmans et al (2004) for treating large compressive goiters with I$^{131}$, single dose, 100 micro-curies/gm of thyroid tissue. After one year, MRI of thyroid showed, -40 + 15% goiter size reduction and improvement in clinical signs, symptoms.23 Our findings showed a goiter size reduction in only eight weeks of pineapple ingestion.

Zimmerman et al, (2004) studied, Moroccan children (n=159) of 6-16 years with severe iodine deficiency were given the iodized salt 25ug iodine / gm salt, added to local salt as potassium iodide salt. After five months and one year evaluation of subjects goiter size was reduced to – 34%, and serum T3, T4 and TSH levels were improved.24 He found a rapid relapse of thyroid dysfunction and goiter often discontinuation of treatment. Our studied showed greater goiter size reduction in only eight week of pineapple ingestion.

FDA (Federal Drug Authority) documented that L-Thyroxin results TSH suppression after 4-6 months duration while this study showed TSH suppression after 08 weeks of pineapple ingestion.25 Our finding showed a statistically significant (P<0.001) reduction in goiter size at eight weeks. The safety of this mode of treatment of endemic goiter during pregnancy and lactation is not established.26-28

CONCLUSION

Pineapple ingestion may be a cost effective treatment for academic goiter. As this is a food
item, it can also improve the patient compliance. It is effective in a very short duration.


REFERENCES


AUTHORSHIP AND CONTRIBUTION DECLARATION

<table>
<thead>
<tr>
<th>Sr. #</th>
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<th>Contribution to the paper</th>
<th>Author=s Signature</th>
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<tr>
<td>1</td>
<td>Abdul Rehman Khokhar</td>
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Good teachers know how to bring out the best in students.

“Charles Kuralt”