HGRP31

Physical and Biochemical studies of *Citrus macroptera* Mont. - an endangered Citrus species from Mizoram, India

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Abstract

A study was conducted on fifteen different accessions of *Citrus macroptera* locally known as Hatkora from Mizoram, North East India to assess the genetic diversity with respect to physical and biochemical parameters of the fruits with respect to fruit weight, fruit length, fruit diameter, fruit volume, pulp weight, peel thickness, number of segments, number of seeds, TSS, sugars, titratable acidity, ascorbic acid content, juice pH, TSS: Acid ratio

Objectives

- ✓ To assess the variaibility in physical parameters of *Citrus macroptera* fruit
- ✓ To assess the variability in biochemical parameters of *Citrus macroptera* fruit juice

Introduction

- ➢Mizoram is situated in North Eastern part of India blessed with rich diversity of fruit crops, among which a semi wild species of Citrus called *Citrus macroptera* locally known as Hatkora is found used by the local tribes for treatment of stomach ailments.
- ➢It is an evergreen tree with abundant long spines on the stem, branches and twigs
- ➢The fruit is mostly smooth or papillate skin and there is presence of oil glands on the skin.
- ➢The study was conducted to assess the physical and biochemical properties of *Citrus macroptera*, which is now considered an endangered species of Citrus





Materials and Methods

- ➢ The study was conducted on fifteen genotypes of *Citrus macroptera* collected for study from 5 districts of Mizoram namely Aizawl, Kolasib, Lunglei, Serchhip and Mamit with a sampling of 3 accessions each consisiting of 3 replications
- ➢ The fruits are collected during its fruiting season to be analyzed at the laboratory of Department of HAMP and Department of Biotechnology, Mizoram University.
- ➢ The physical parameters analyzed were given in Table no. 1
- ➢ The biochemical parameters estimated were:

1. Titratable acidiity: Titration method
2. Juice pH: Digital pH meter Cyberscan 510
3. Ascorbic acid content Spectophotometer method
4. Sugars estimation: (Total sugar, reducing and non reducing sugar): As method given by AOAC
5. TSS : Digital hand refractometer

- ➢ The data were statistically analyzed using Completely Randomized Design (CRD)

Result and Discussion

Parameters	Values
Fruit weight (g)	560.59 ± 133.45
Fruit length (cm)	9.78 ± 0.68
Fruit diameter (cm)	12.56 ± 1.07
Fruit volume (cc)	580.30 ± 178.75
Pulp weight (g)	363.61 ± 99.22
Peel thickness (cm)	10.24 ± 0.10
Number of segments	14.36 ± 0.98
Number of seeds	17.28 ± 4.21

Table 1: Physical characteristics of *Citrus macroptera*

Parameters	Values
Titratable acidity (%)	9.54 ± 0.72
Juice pH	2.19 ± 0.12
TSS (°Brix)	6.82 ± 0.28
Ascorbic acid (mg/100 g)	67.42 ± 0.51
Total sugar (%)	2.83 ± 0.31
Reducing sugar (%)	1.26 ± 0.15
Non reducing sugar (%)	1.63 ± 0.30
TSS:Acid ratio	1.08 ± 0.08

Table 2: Biochemicall characteristics of *Citrus macroptera*

- ➢Data are expressed as means ± standard error of triplicate samples
- ➢Analysis of variance revealed mean square due to genotypes were significant on 16 parameters
- ➢Sugars and organic acids are the most important determination of fruit quality as organic acids has effect on the storage life of the fruits (Sun et al., 2013)

Conclusion

- ✓ There is wide range of variability in terms of physical and biochemical parameters of Hatkora in Mizoram
- ✓ Hatkora is a high valued crop for fresh consumption or processing due to its good physical and chemical properties
- ✓ The need for conservation of this endangered Citrus species should be encouraged in NEH region

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