International Scholars Journals

Frontiers of Agriculture and Food Technology ISSN 2736 -1624 Vol. 11 (1), pp. 001-003, May 2021. Available online at www.internationalscholarsjournals.org © International Scholars Journals

Short Communication

Quantitative and qualitative intra and interspecific variations in terms of numbers

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Accepted 16 May 2021

Young leaves of three cultivars of *Lycopersicon esculentum* (Mill) and a cultivar of *Trichosanthes cucumerina var. anguina* (Haines) were freshly collected at 50% flowering. Crude leaf proteins were extracted from them and characterized using polyacrylamide gel electrophoresis. Intercultivar qualitative as well as quantitative protein bands depict some degree of relationship among the *Lycopersicon* cultivars studied. The degree of variation in protein bands as a measure of genetic divergence between *L. esculentum* cultivars and *T. cucumerina* was discussed.

Key words: Electrophoresis, protein, *Lycopersicon*, *Trichosanthes*.

INTRODUCTION

In Nigeria, tomato (*Lycopersicon esculentum*. Mill) fruits are frequently ground and used in soup and local dishes. In some areas of southern Nigeria, the red pulp of the snake gourd (*Trichosanthes cucumerina var. anguina. Haines*) is usually added to ground tomato and blended together to make soup.

Gel electrophoresis can directly equate variation in protein banding patterns to genes coding various proteins (Gottileb, 1971) and has been used on *Amaranthus* species (Illoh, 1990), Sida (Illoh, 1993), *Crotalaria* species (Akpabio, 1988), cocoa cultivars (Atkinson et al., 1986), apricot (Bryne and Littleton, 1989), sorghum (Morakinyo, 1984), cultivated sesame (Isshiki and Umezaki, 1997), and species of *Prunus* (Mowery et al., 1990).

The present study attempts to employ gel electrophoresis of crude protein in the leaves of three cultivars of tomatoes and a cultivar of snake gourd to evaluate the genetic variability and relationship between the *Lycopersicon* and *Trichosanthes* species.

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MATERIALS AND METHODS

Viable seeds of three cultivars of *L. esculentum* (NHLE-158-3, Roma and IB-Local) collected from Nihort, Idi Isin Ibadan, Nigeria and one cultivar of *T. cucumerina var. anguina* from a farmer at Ipetumodu were planted in pot and raised to maturity at the experimental field of the Department of Pure and Applied Biology, Ladoke Akintola University of Technology, Ogbomoso in Oyo State, Nigeria. Two leaf discs of 1 cm diameter each were ground in an eppendorf tube with 100 µl of lysis buffer. The mixtures were allowed to settle inside the eppendorf immersed in an ice bath for 1 h, and the supernatants were fractionated by 7.5% SDS-PAGE (Laemmili, 1970).

RESULTS AND DISCUSSION

Protein distribution patterns in three cultivars of *Lycopersicon* and one cultivar of *Trichosanthes* studied reveal distinct quantitative and qualitative intra and interspecific variations in terms of numbers, positions and band intensity (Figure 1). Bands common to two or more cultivars were observed (Table 1).

Gel electrophoresis has shown that many isoenzymes and polymorphic proteins are widely distributed in plants (Cherry and Ory, 1972) and that protein polymorphism signals the existence of allelism

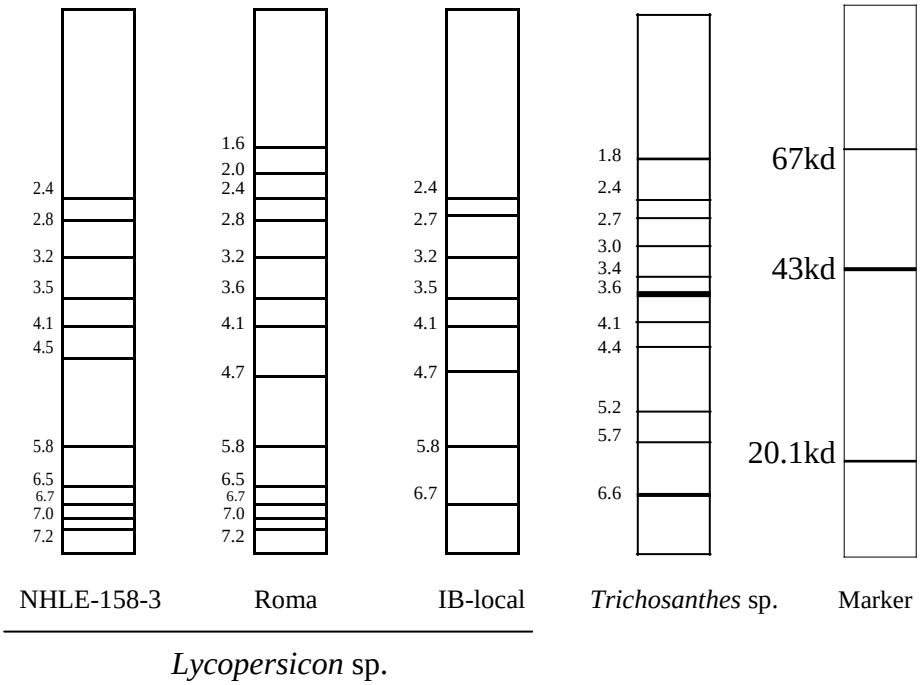

Figure 1. Diagrammatic representation of stained protein bands observed during gel electrophoresis of leaf extract.

Table 1. Common band relationship among *Lycopersicon* and *Trichosanthes* cultivars.

	NHLE-158-3	Roma	IB-local	*Trichosanthes sp.*
NHLE-158-3	-	-	-	-
Roma	9	-	-	-
IB-local	6	6	-	-
Trichosanthes sp.	2	3	3	-

(Goodenough, 1978). In the present study, the degree of variation in the bands is interpreted as a measure of genetic divergence of *Lycopersicon* and *Trichosanthes* species.

The presence of common protein bands among the species may be an evidence of evolutionary origin of the cultivars studied. Many protein bands found to be unique in the *Trichosanthes cucumerina var. anguina* (Figure1) suggest little or no genetic relationship with *Lycopersicon*.

ACKNOWLEDGEMENTS

The authors are grateful to Dr. A. Pellegrineschi of Biotechnology unit, International Institute of Tropical Agriculture, Ibadan, Nigeria for his support on gel electrophoresis. We also tank Mrs. Ashiru of National Institute of Horticultural Research, Idi Isin, Ibadan, Nigeria for giving us some viable seeds of *Lycopersicon*.

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