SYUDY OF HIGHER PLANT PART EXTRACTS ANTIFUNGAL EFFECT ON ALTERNARIA SOLANI (ELL. & MART.) CAUSING EARLY BLIGHT OF TOMATO

Dr. Dilip Sakharam Ghuge
Department of Botany, Narayanrao Waghmare Mahavidylaya, Akhada Balapur, Dist. Hingoli

Abstract
A study was carried out on effect of aqueous and ethanol extracts of Tinospora codifolia plant on the growth of Alternaria solani isolates, leaf spot pathogen of Tomato at different level of concentration (10%, 20%, 30% & 40%). The ethanolic extracts of the plant parts showed good inhibitory activity when compared with aqueous extracts. The ethanolic leaf extracts was more effective in reducing the growth of above pathogen.
Keywords: *Higher plant leaves, aqueous, ethanolic extract, pathogenic fungi, of Tomato plant.*

Introduction:
Tomato (*Lycopersicon esculentum* mill.) is an important commercial vegitable crop grown widely throught the world including tropical, sub tropical and temprate regions. English traders of East India company introduced tomato in India in1822 India is second largest producer of tomato next to China. In big group of vegitable belongs to solanaceous crops tomato occupy a distinct position for their spectularly, high productivity and commercial value obtained in the market.As a processing crop,tomato ranks first among vegetables. The production of tomato has trmedusdasly increasing due to its multifarious uses in raw, cooked and processed forms as soups, sauces, ketchups, preservers and pickles (Tiwari and Choudry, 1986).
Guduchi [Tinospora cordifolia (Willd.) Miers ex Hook.F.&Thoms] is distributed throught tropical Indian subcontinent. It is wildely used in veterinary folk medicine, ayurvedic system as general tonic, antiperiodic, anti-spasmodic, anti-inflammatory, and antiarthritic, anti-alergic and anti-diabetic medicine (Nadkarni and Nadkarni)1976, Chopra et. Al,1956; Zhao 1991). The root of this plant is known for its antistress, anti-leprotic and anti- malarial activeties (Zhao, 1991 ; Nayampalli ,1982).
A variety of constituents have been isolated from Tinospra Cordifolia plant such as alkaloids, diterpenoid lactones, glycosids steriods, sesquiterpenoid, phenolics, aliphathic compounds and polysaccharides (Singh,et. al, 2003). The present paper reports in vitro anti fungal activity of leaves, of Tinospra Cordifolia plant against A. solani causing early blight in tomato.

Materials and methods:
Fresh leaves, of Tinospra Cordifolia collected from college campous and surface sterlized by 2% sodium hypochlorite solution and then washed with sterile distild water. The aqueous extracts were prepared in 100ml striled disteld water. Fresh plant leaves were crushed and either 10,20,30 and 40g of the material was mixed in 100ml distilled water to prepare 10,20,30 and 40% extracts, which were filtered through double layered muslin cloth followed by Whatmans filter paper. The extracts were stored in refrigerator in pre strelised flasks until used.
Ethanolic extracts were also prepared similarly by using 80% ethanol. After filtration, flasks were heated to evaporate the ethanol and set the volume to 100ml with the addition of sterile distilled water and stored in refrigerator until used.
A.Solani (Ellis and Mart.) was isolated from diseased leaves and fruits of tomato and pure cultures were manted on PDA slants.
Bioassay was carried out in glucose nitrate (GN) medium. 10ml extract was mixed with 10ml of double strength pre sterilized glucose nitrat medium in Erenmeyer flasks under aseptic condition. One ml of standard spore suspention of test pathogen was adeed and flasks were incubated at room temperature (27± 1-2º) for seven days Suitable control was maintained in with addition of sterile distilled water to the medium. After incubation the mycelial mat was harvested by filtration, dried in oven at 55 ºc for 24 hour and dry mycelial weight was recorded.

Result and discussion: Ethanolic extract (at 20% concentration) of leaves, found to be effective in reducing growth of A.solani. Similar results obtained by Narian and Satapathy (1977) with vinca rosea against F.oxysporium and Aspergillus niger. Sharma and Trivedi (2002) also reported that leaf extract of T. cordifolia inhibieted growth of F.oxysporum. Abraham and Prakasan (2001) reported inhibitory effect of Azadirtachta indica, ocimum sanctum and vitex negundo against F.oxysporum.

Table: 1 Effect of aques extract of T. cordifolia on growth of *Alternaria solani*. (Ell. And Mart) isolates.

SSr.No.	P Plant leaves aqueous E extract.	Dry wt. of mycelial mat (Mg) of different isolates of ***A.solani.***						
		I	II	III	IV	V	VI	VII
01	05% plant extract	145	148	155	134	138	142	147
02	10% plant extract	110	114	117	115	118	120	115
03	15% plant extract	103	105	104	105	102	100	105
04	20% plant extract	95	90	88	94	82	86	80
05	Control	160	165	158	160	162	165	164

Table: II Effect of ehanolic extract of T. cordifolia on growth of *Alternaria solani*. (Ell. And Mart) isolates.

S Sr.No.	P Plant leaves ethanolic E extract.	Dry wt. of mycelial mat (Mg) of different isolates of ***A.solani.***						
		I	II	III	IV	V	VI	VII
01	05% plant extract	118	122	115	120	119	114	112
02	10% plant extract	81	80	83	84	87	85	90
03	15% plant extract	65	62	60	63	62	60	58
04	20% plant extract	39	37	33	32	38	35	40
05	Control	160	165	158	160	162	165	164

The result obtained during present study are in agreement with those of Nagaragan et.al,(2006), who observed that the ethanolic leaf extract of T. cordifolia was inhibitory to F. oxyporum and A. solani

References

1. Abraham, S. and Prakasan (2001).jr, Mycol,plant path .30:257.
2. Chopra R. N.,Nayar. S. L.,and Chopra I. C. (1956)Eds. " Glossary of Indian medicinal plants". CSIR, New Delhi.
3. Nadkarni K.M. ,Nadkami A. K., (1976) ."Indian Materia Medica," Vol. III Edn., MIS Popular Prakasan Pvt.Ltd. Mumbai.
4. Nagarajan S.M., Myla J. and Dhivas. (2006). Geobios.33 (2-3):213.
5. Narain, Advesh and Satapathy, J. N. (1997). Indian Phyto. Path. 30:36.
6. Nayampalli S., Ainapure S.S. and Nadkarni P. M. (1982) Indian J. Pharm. 14:64.
7. Sharma nadhi and Trivedi, P.C. (2002). Asian J. Exp. Sci., 16 (1-2):21.
8. Singh S.S., Panday S.C., Srivastava, S., Gupta, V. S., Patrao B. and Ghosh, A. C. (2003). Indian Journal of Pharmacology. 35:83.
9. Tiwari,R.N. and B. Choudhari (1986) Solanesious Crops Tomato (in) Vegetable crops in India, PP.248-290..
10. Zhao, T.F.,Wang X, Rimando, A.M., and che, C. (1991). Planta med. 57:505.