

*Rhizobium leguminosarum* bv.viciae

03 / 12 / 2007

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**ABSTRACT**

*Rhizobium leguminosarum* bv.viciae was isolated and identified from root nodules of *Vicia faba* L. plant. Its susceptibility to 14 types of  $\beta$ -lactam antibiotics was tested by disk diffusion method. The isolate was resistant to the following antibiotics; Amoxicillin, Carbencillin, Cephalexin, Cephadrine, Cefuroxime, Cefotaxime, Ceftazidime, Cefixime, Ceftizoxime, Cefepime, and Aztreonam, while it was sensitive to only three antibiotics including; Imipenem, Cefoperazone and Ceftriaxone. The occurrence of multiple drug resistance in a soil bacterium, that is not a pathogen, suggests that chemotherapeutic use of antibiotics is not required for the development of multiple drug resistance. This may consider as a defense line to protect plant roots from pathogenic soil microorganisms.

*Rhizobium leguminosarum* bv.viciae

(14)

*Vicia faba* L.

(11)

Amoxicillin, Carbencillin, Cephalexin, Cephadrine,  
Cefuroxime, Cefotaxime, Ceftazidime, Cefixime, Ceftizoxime, Cefepime,

Imipenem,

Aztreonam,  
.Cefoperazone, Ceftriaxone

Antagonism

.(2,1)

*Rhizobium*

.(3)

.(1)

.(2,1)

$\beta$ -lactam Antibiotics -

Bactericidal Effect

Peptidoglycan Layer

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(5,4)

*Cephalosporium spp.*      *Penicillium spp.*

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(7,6)

(4)

*Rhizobium*

—

***Rhizobium leguminosarum bv.viciae***

*R. leguminosarum bv.viciae*

(10)

*Vicia faba L.*

( 4-3 )

(8)

(%95)

Yeast Extract Mannitol (YEM) Agar

(9,8)      5      30

*R. leguminosarum bv.viciae*

(%1) ( 30)  
(20)  
( / 500)  
( )  
(10)  
(%1)  
(40) .(11)  
- (14)  
(13) Disk Diffusion Method  
( Bioanalyse )  
Cephradine(30µg) Cephalexin(30µg)  
Cefuroxime(30µg)  
Cefotaxime(30µg), Ceftriaxone(30µg)  
Ceftazidime(30µg), Ceftizoxime(30µg), Cefixime(5µg),  
Cefepime(30µg) Cefoperazone(75µg)  
Carbencillin(100µg) Amoxicillin(25µg)  
Carbapenems Imipenem(10µg)  
.Monobactams Aztreonam(30µg)  
) Clinical Laboratory Standards Institute (CLSI)  
- (NCCLS)  
( / <sup>8</sup> 10x1 )  
15  
4 30  
(14,13,12)

*R. leguminosarum bv.viciae*

YEM

(15)

5

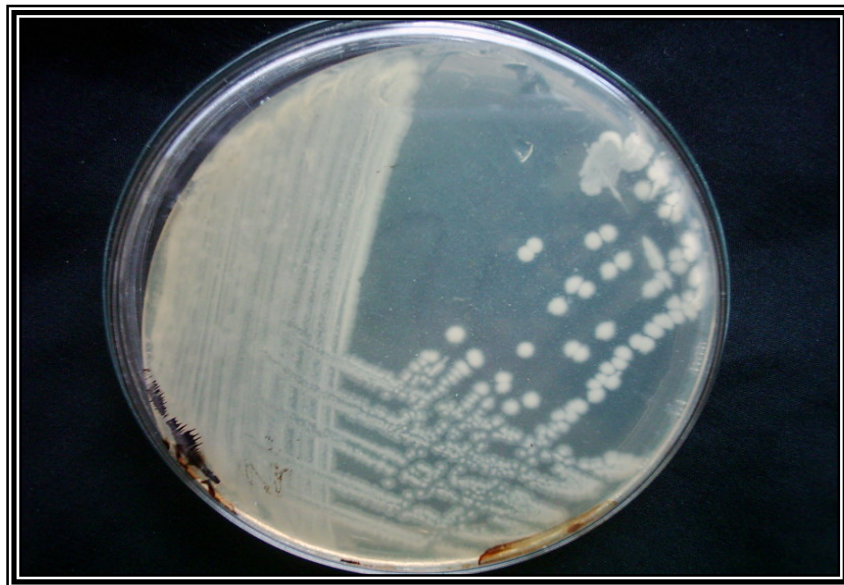
(1 )

. *R. leguminosarum bv.viciae*

(40)

*R. leguminosarum bv.viciae*

. (16) *R. leguminosarum bv.viciae*



(YEM)

*R. leguminosarum bv.viciae*

(1)

... *Rhizobium leguminosarum bv.viciae*

(1 )  
 - *R. leguminosarum bv.viciae*  
 (14) (11)  
 Cefoperazone (3) (%78.6)  
 .(2 ) %21.4 Ceftriaxone Imipenem

*R. leguminosarum bv.viciae* (1)

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	( / )	
R	25	Amoxicillin
R	30	Aztreonam
R	100	Carbencillin
R	30	Cefepime
R	5	Cefixime
S	75	Cefoperazone
R	30	Cefotaxime
R	30	Ceftazidime
R	30	Ceftizoxime
S	30	Ceftriaxone
R	30	Cefuroxime
R	30	Cephalexin
R	30	Cephadrine
S	10	Imipenem

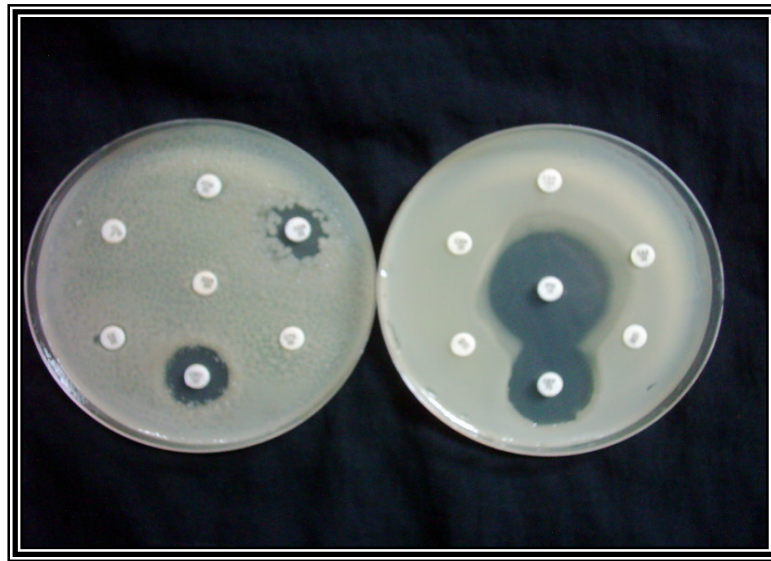
(14 ) =S = R

(Ceftriaxone Cefotaxime Cefepime Aztreonam Ceftazidime Cephalexin Cefpoerazone Cefuroxime  
 Cefizoxime Cefixime Cephadrine : S≥20mm , R≤16mm)  
 (Amoxicillin& Carbencillin: S≥16mm ,R ≤13mm)  
 Imipenem ( S≥22mm ,R≤19mm)

*R. leguminosarum bv.viciae*

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.(5)



- *R. leguminosarum bv.viciae* (3)

Ceftazidime .6 Cephalexin .5 Cefpoerazone .4 Amoxicillin .3 Cefuroxime .2 Carbencillin .1  
Cephradine .12 Ceftriaxone .11 Cefotaxime .10 Cefepime .9 Aztreonam .8 Imipenem .7  
. Cefizoxime .14 Cefixime .13

*R. leguminosarum bv.viciae*

$\beta$ -lactamases -

*R.* (48) (17) Elkan Cole .(12)  
(%60) (8) *japonicum*

(%47) Erythromycin Polymyxin B Chloramphenicol  
(%25) Neomycin Penicillin G  
Chloramphenicol Multiple resistance  
Streptomycin Penicillin G Tetracycline

Simultaneous Resistance

*R. japonicum*

Penicillin G Neomycin Chloramphenicol  
*Enterobacteriaceae*

*Agrobacterium*

(18) Transmissible Plasmid

*R. leguminosarum bv.viciae*

(19) Schwinghamer

*R. trifolii*

Oxacillin , Chloramphenicol , Polymyxin B  
/ (250,150,120)

Kremer . Tetracycline

*Rhizobium*

(20) Peterson

Penicillin G

*R. leguminosarum bv.viciae*

.Tetracycline

Kanamycin Streptomycin

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*R. japonicum*

(MIC)

16) Piperacillin ( / 128)

Meropenem ( / 16) Ceftazidime ( /





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