

CHAPTER V



CONCLUSION

Since antimicrobial substances are not confined to living microorganisms such as various *Streptomyces* and other fungi, but are also found in higher plants. Among them, the local plant flora are not exhaustively used in herbal medicines. Thus, antimicrobial activities of 329 samples from 289 species belonging to 85 families of randomly selected higher plants were evaluated against five representative microorganisms, three representative bacteria and two fungi. The three test bacteria are *Staphylococcus aureus* Rosenbach (ATCC 10536), *Escherichia coli* (Migula) Castellani et Chalmers (ATCC 6633), and *Bacillus subtilis* (Ehrenberg) Cohn (ATCC 6538P), and the two fungi are *Aspergillus niger* van Tieghem (K 535), and *Penicillium chrysogenum* Thom (USIS 5370).

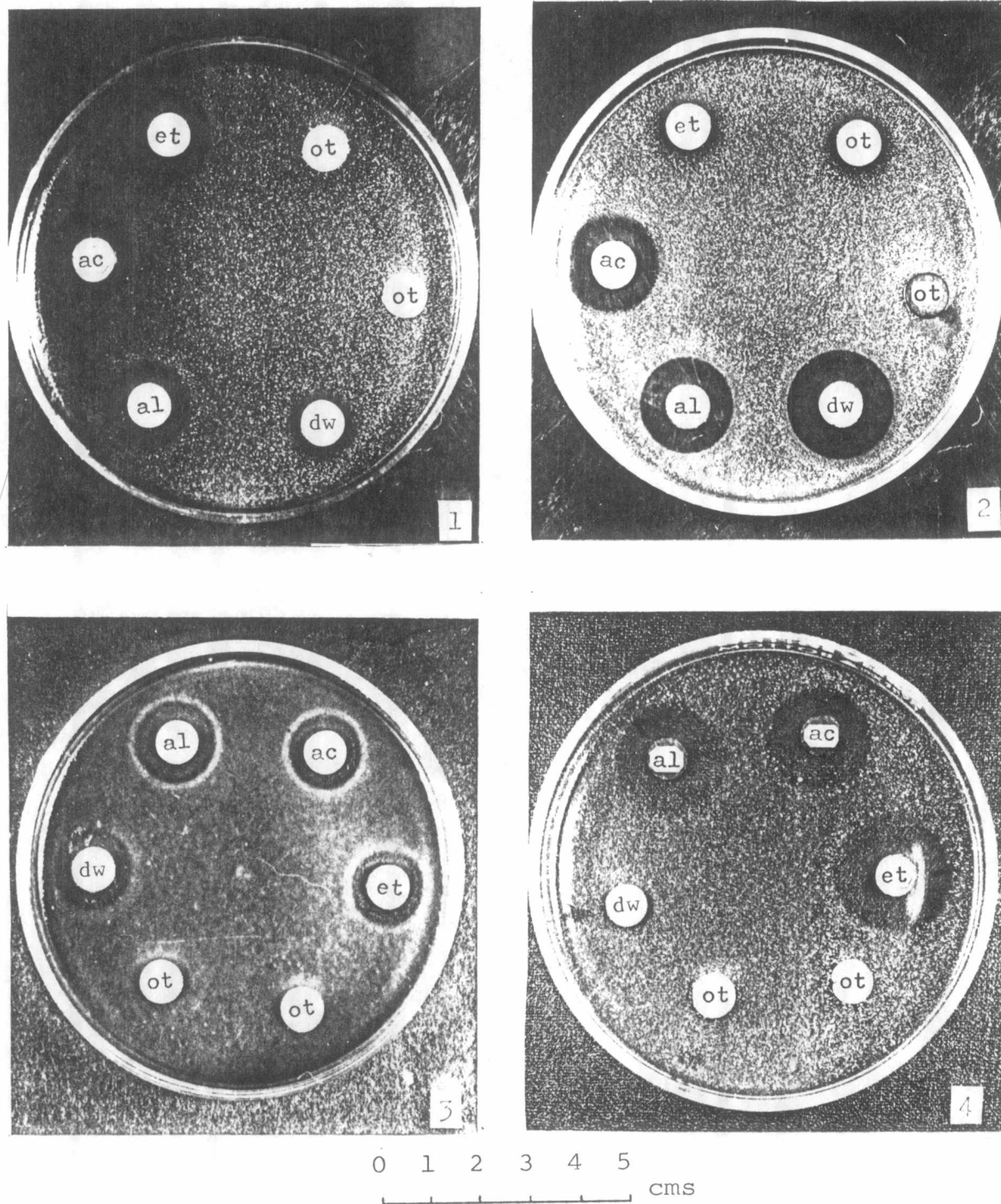
By means of agar disc method, it was observed that 210 samples from 195 species of plants used were active against bacteria and 48 samples from 48 species of plants were active against fungi (Table 7 pp. 115-117) and among these positives, there are plants that showed marked activity against bacteria, fungi or both (Table 9 p. 119).

It is noted that most of the tested plant extracts appeared

to have more activity against the spore-forming bacilli and against Gram positive bacteria than Gram negative ones. However their activities against fungi are very low in comparison to those against bacteria.

It should also be pointed out that at present there are fewer drugs active against fungi. Therefore those principles that are active along this line should be studied further.

In conclusion the author would appreciate to mention that the results obtained from this paper, the investigation of 329 samples from 195 species of higher plants may significantly contribute to Medical Sciences. However, more precised and confirmative data need to be added up such as purification of each active constituent and *in vivo* studies. Hopefully this screening data should stimulate further attempts to utilize plant extracts for remedial purpose.



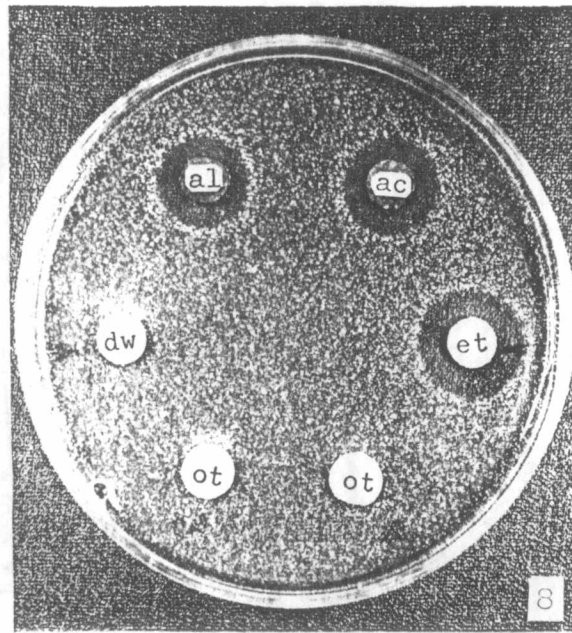
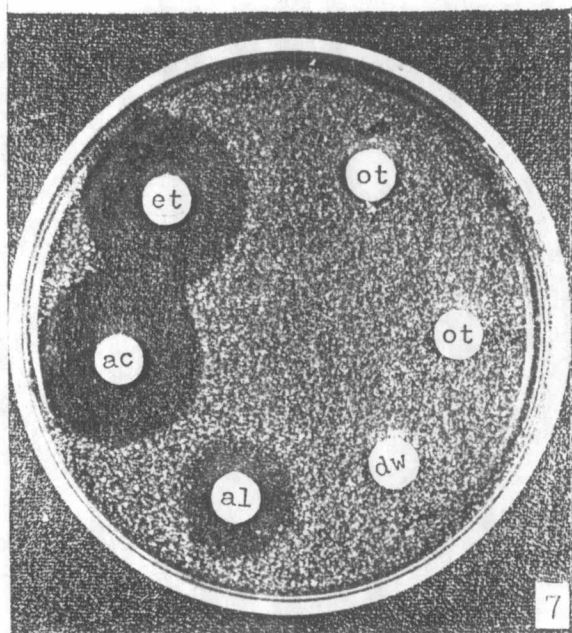
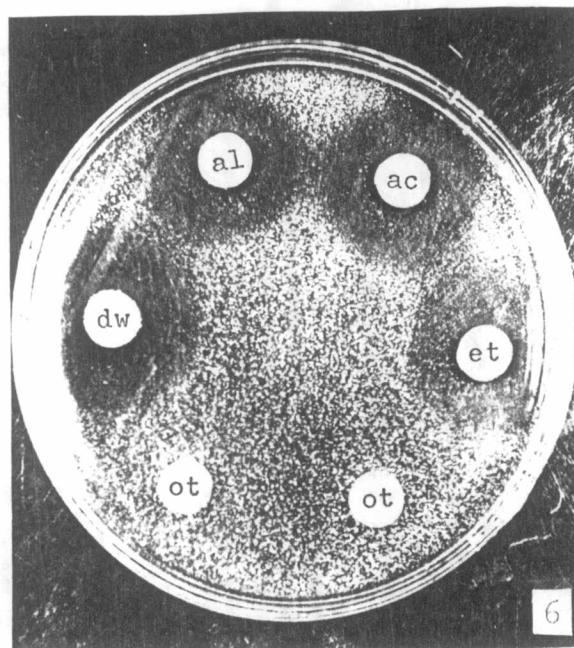
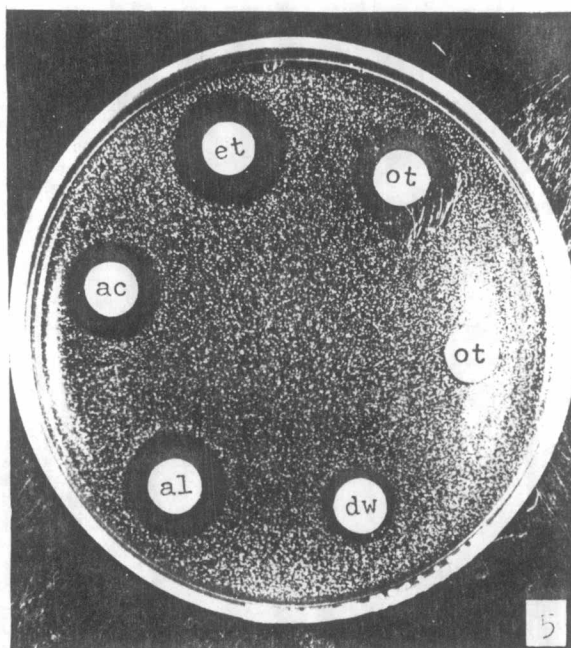
Showing Activities of Plants Tested Against *Staphylococcus aureus*

Fig.1 Activities of the rhizomes of *Rheum emodi* Wall.

Fig.2 Activities of the leaves of *Moringa oleifera* Lamk.

Fig.3 Activities of the roots of *Glycyrrhiza wralensis* Fisch.

Fig.4 Activities of the wood of *Dracaena lowrieri* Gagnep.



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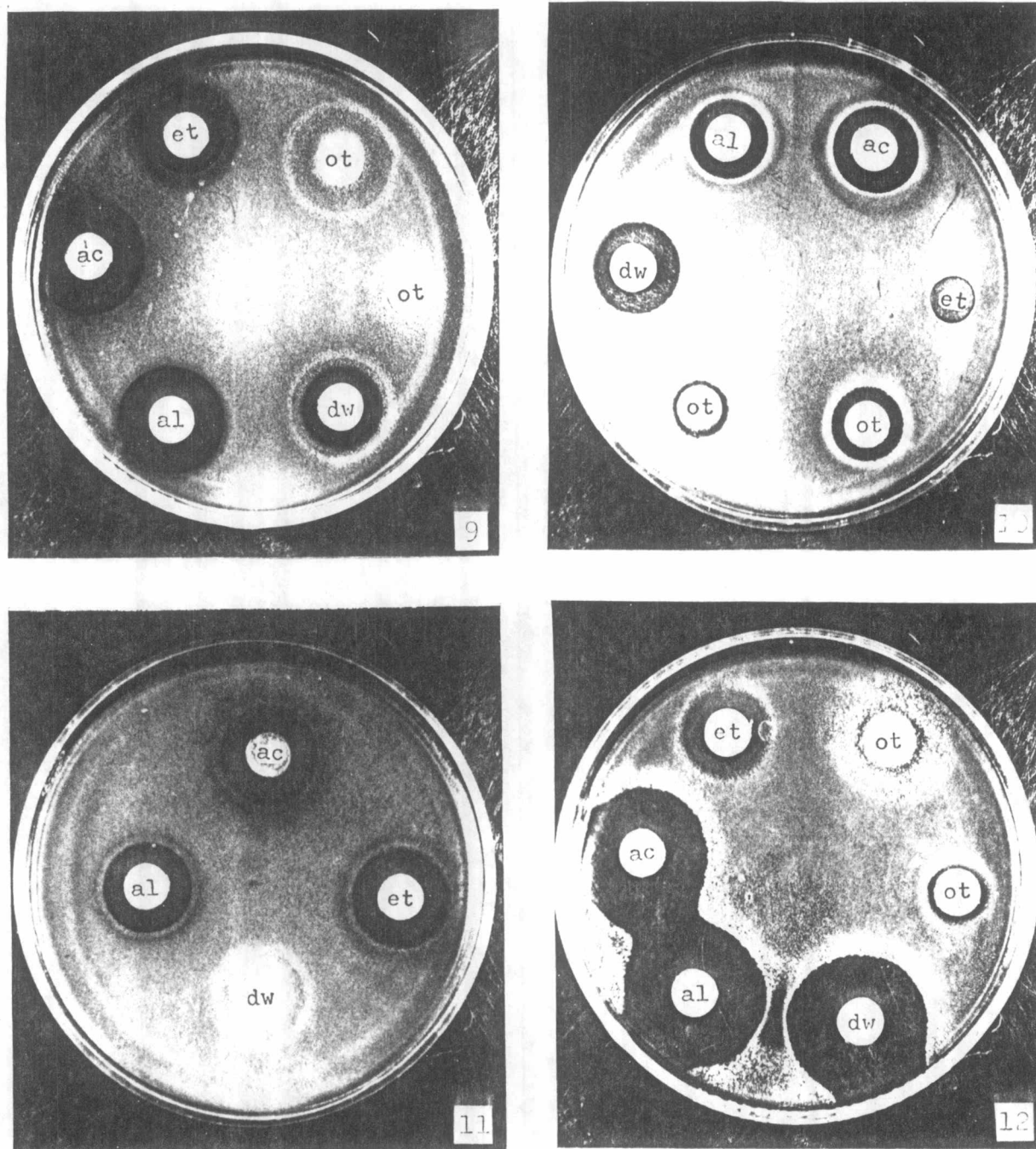
Showing Activities of Plants Tested Against *Escherichia coli*

Fig.5 Activities of the rhizomes of *Rheum emodi* Wall.

Fig.6 Activities of the aerial parts of *Impatiens balsamina* L.

Fig.7 Activities of the leaves of *Piper betel* L.

Fig.8 Activities of the wood of *Dracaena lowrieri* Gagnep.



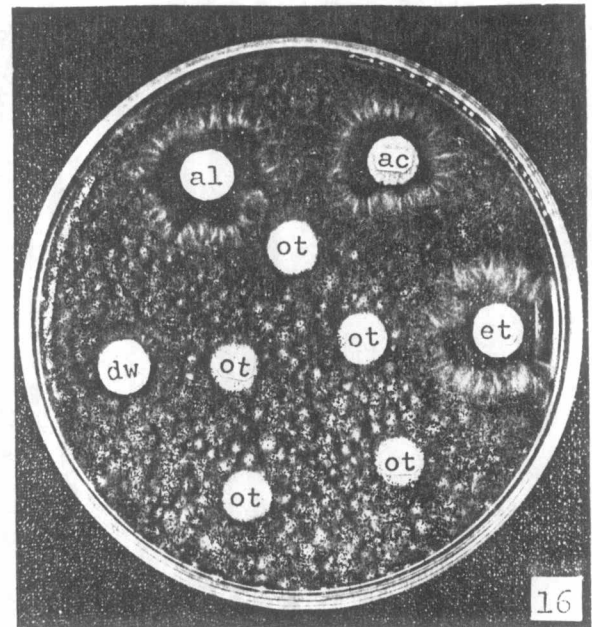
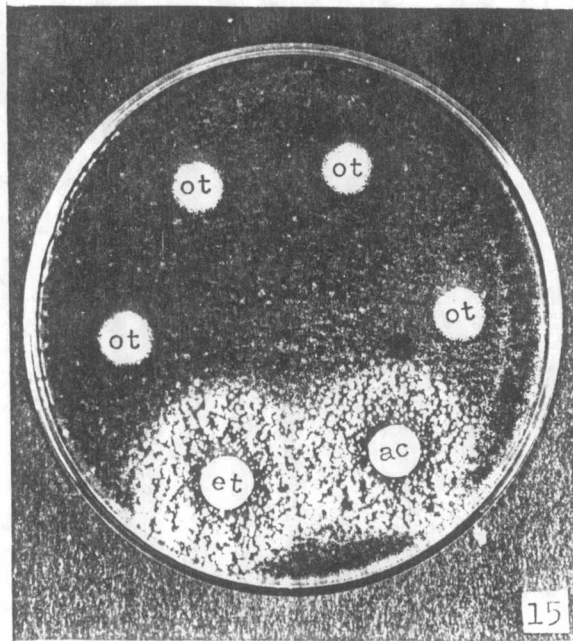
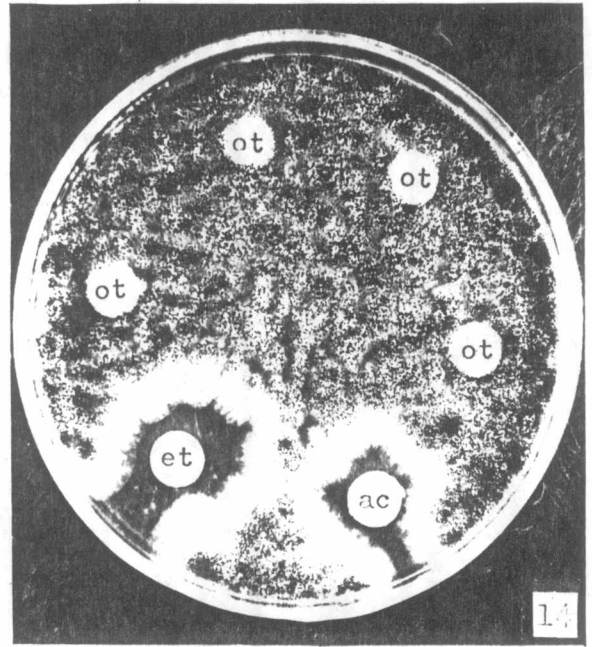
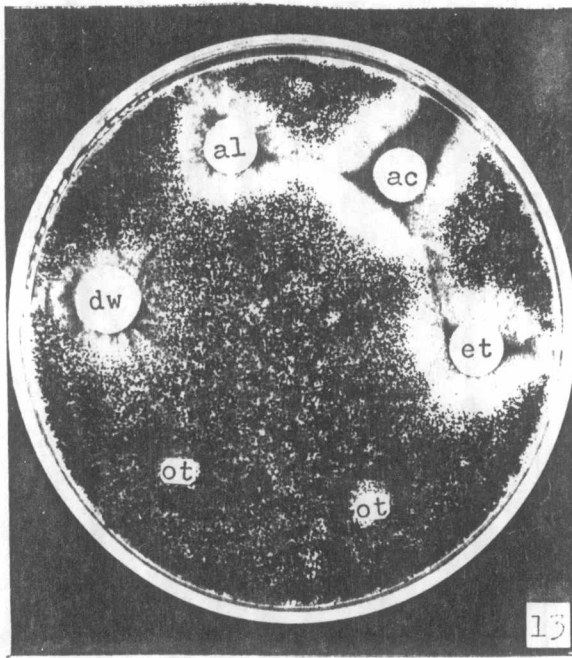
Showing Activities of Plants Tested Against *Bacillus subtilis*

Fig. 9 Activities of the rhizomes of *Rheum emodi* Wall.

Fig.10 Activities of the leaves of *Moringa oleifera* Lamk.

Fig.11 Activities of the flowers of *Mesua ferrea* L.

Fig.12 Activities of the pulps of *Citrus hystrix* DC.



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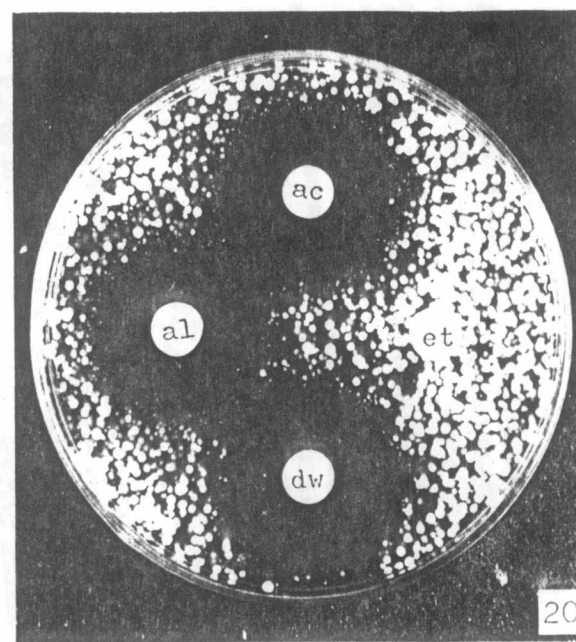
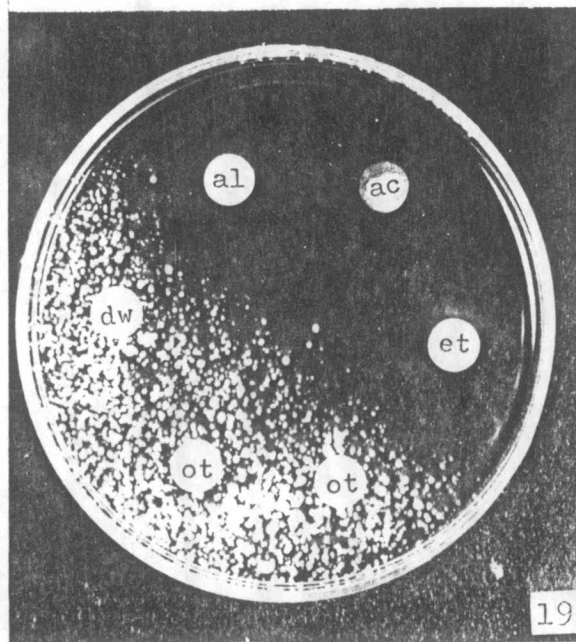
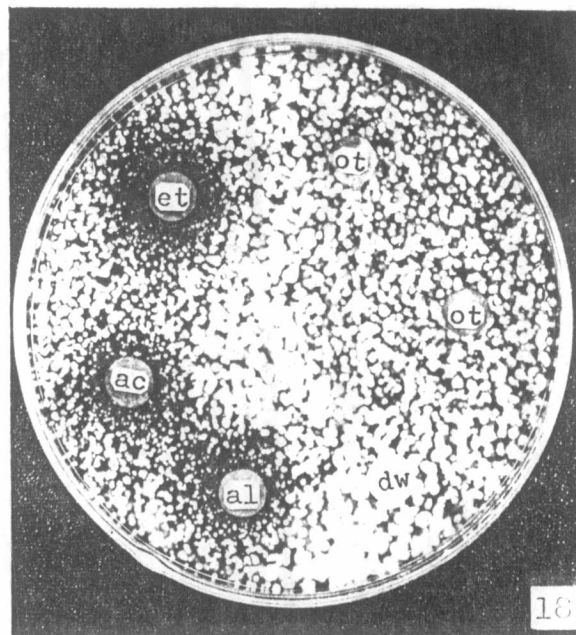
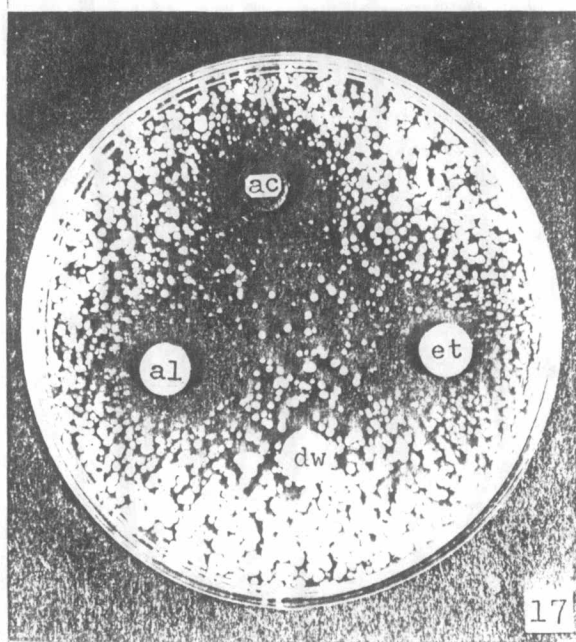
Showing Activities of Plants Tested Against *Aspergillus niger*

Fig.13 Activities of the aerial parts of *Impatiens balsamina* L.

Fig.14 Activities of the rhizomes of *Alpinia galanga* Swartz.

Fig.15 Activities of the wood of *Euphorbia antiquorum* L.

Fig.16 Activities of the aerial parts of *Nasturtium benghalense* DC.



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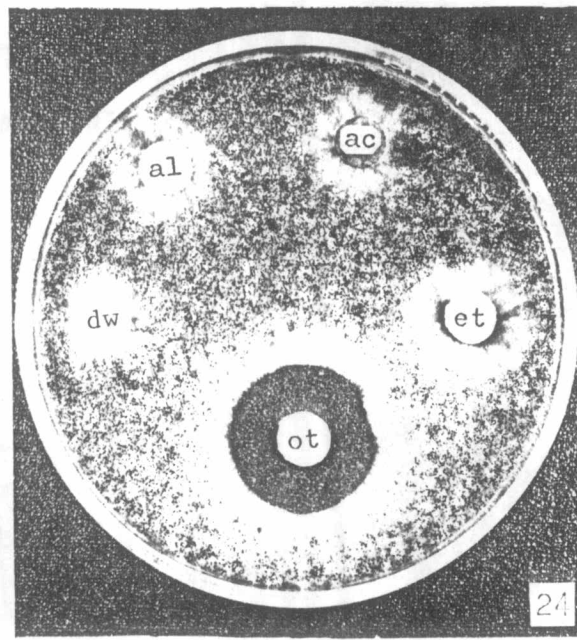
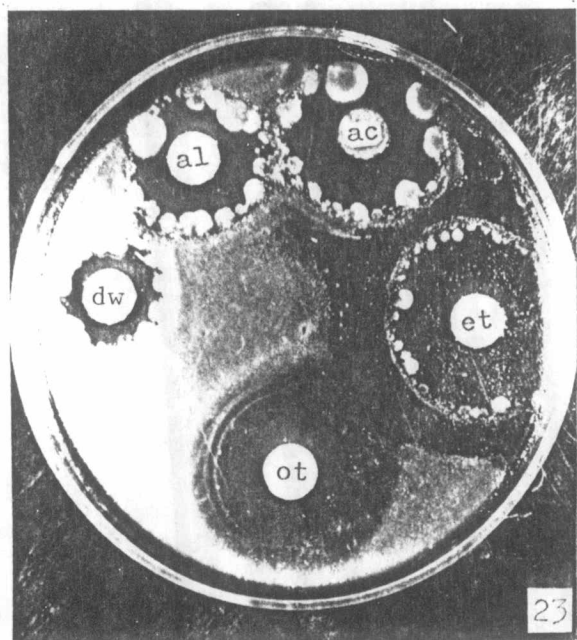
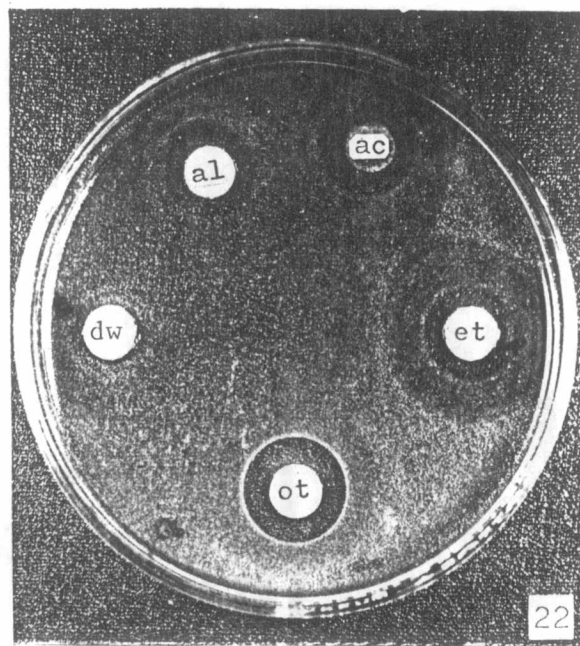
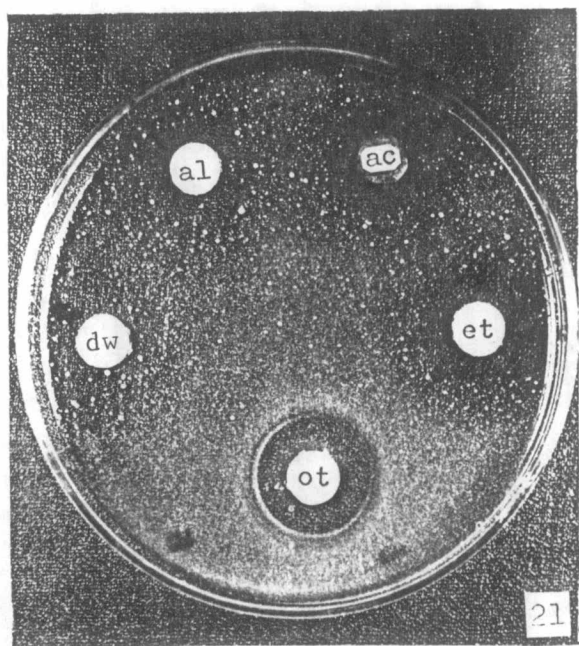
Showing Activities of Plants Tested Against *Penicillium chrysogenum*

Fig.17 Activities of the wood of *Alangium salviifolium* Wang.

Fig.18 Activities of the leaves of *Piper betel* L.

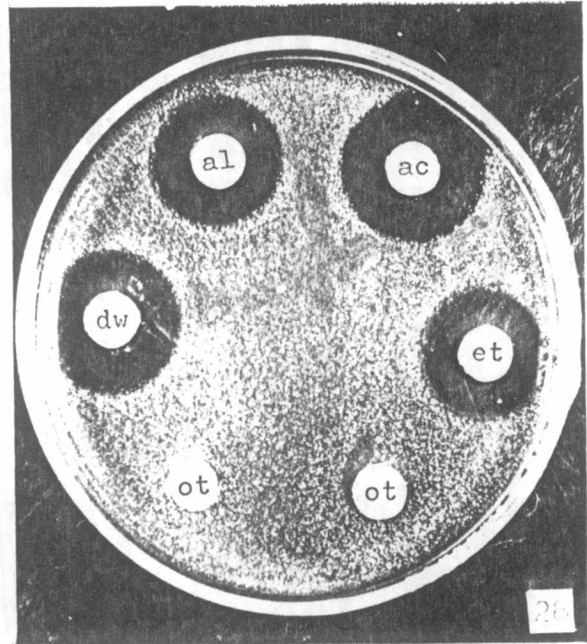
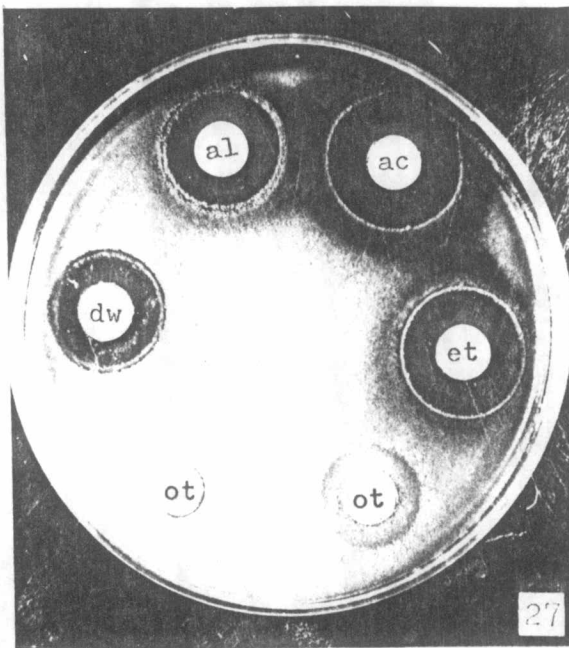
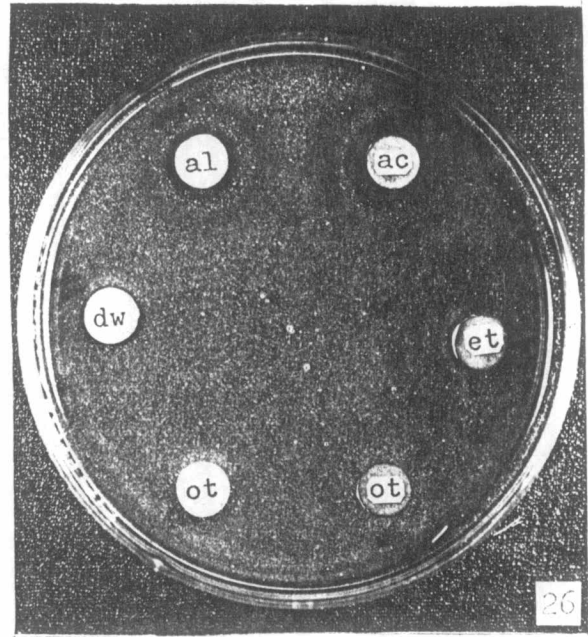
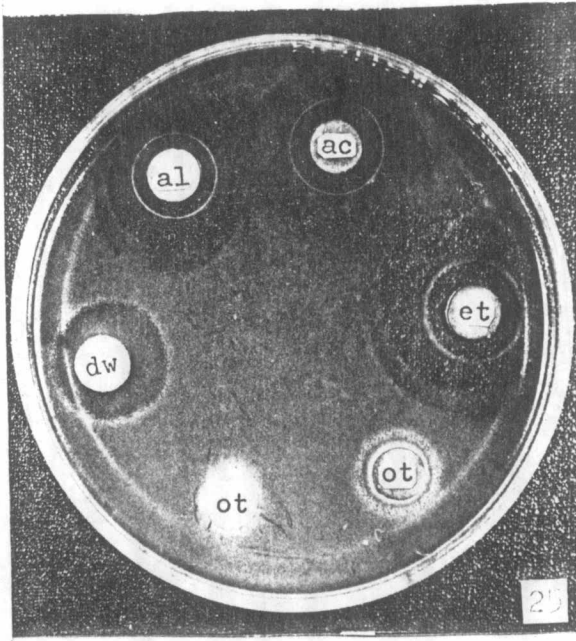
Fig.19 Activities of the roots of *Plumbago zeylanica* L.

Fig.20 Activities of the seeds of *Camellia sasanqua* Thunb.



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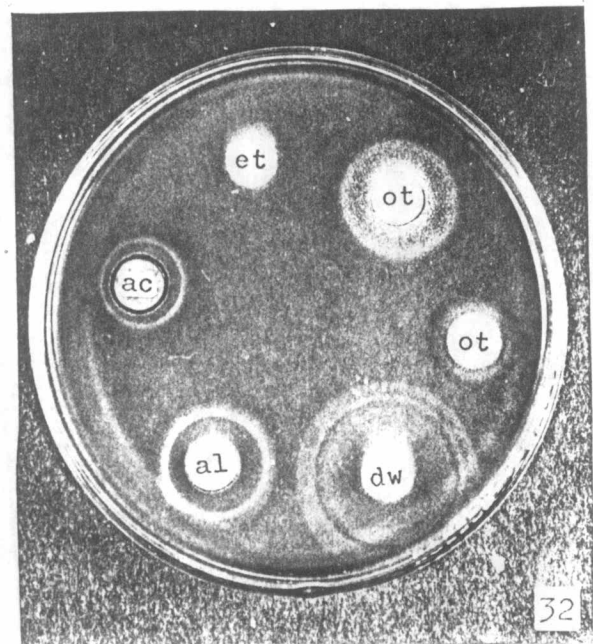
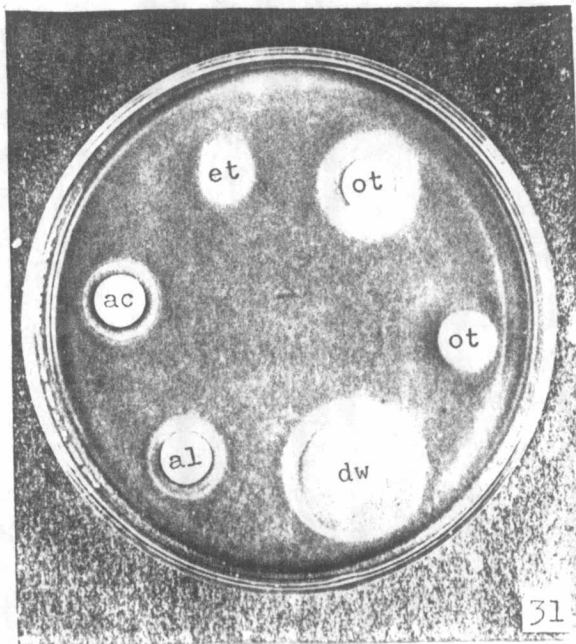
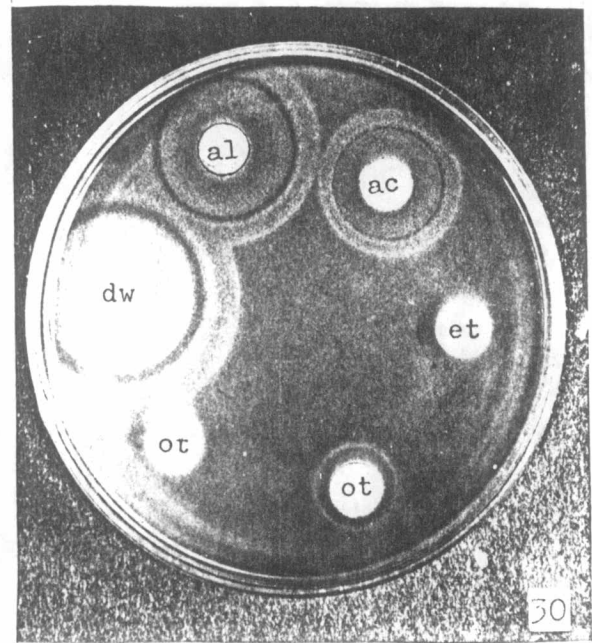
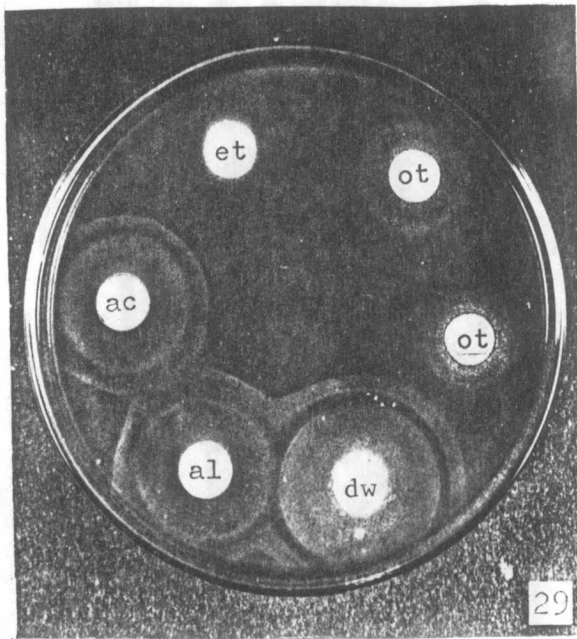
Showing Activities of the roots of *Plumbago rosea* L. Against *Staphylococcus aureus* (Fig.21), *Escherichia coli* (Fig.22), *Bacillus subtilis* (Fig.23), and *Aspergillus niger* (Fig.24)



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Showing Activities of the leaves of *Lawsonia inermis* L.var.*alba* Hassk.
 Against *Bacillus subtilis* (Fig.25),and *Staphylococcus aureus* (Fig.26)

Showing Activities of the aerial parts of *Impatiens balsamina* L.
 Against *Bacillus subtilis* (Fig.27),and *Staphylococcus aureus* (Fig.28)



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- Showing Activities of Plants Tested Against *Bacillus subtilis*
- Fig.29 Activities of the rhizomes of *Dactyloctenium aegyptiacum* Willd.
- Fig.30 Activities of the aerial parts of *Polygonum chinensis* L.
- Fig.31 Activities of the wood of *Averrhoa carambola* L.
- Fig.32 Activities of the aerial parts of *Catharanthus roseus* G. Don.