International Journal of Research Studies in Biosciences (IJRSB)
August 2015, PP 38-42
ISSN 2349-0357 (Print) & ISSN 2349-0365 (Online)
www.arcjournals.org

Isolation and Prelimnary Screening of Microbial Isolates for Extracellular Production of Amylase

Gajendra Kurrey[1]

Department of Microbiology and Bioinformatics, Bilaspur University, Bilaspur.
gajendrakurrey@gmail.com

Seema A. Belorkar[2]

Department of Microbiology and Bioinformatics, Bilaspur
seema.belorkar@gmail.com

Dr. DSVGK. Kaladhar

Head, Department of Microbiology and Bioinformatics, Bilaspur University, Bilaspur.

Abstract: *The present study evaluated an amylolytic potential of the isolates from selected soil sample. Initial screening process involved a selection medium containing starch as a sole source of collect five soil sample,Flour Mill (FM),Domestic wastes dumped soil (DWDS), Agricultural soil (AS),*

Agricultural waste soil (AWS), Prince Bakery waste dumped soil (PBWDS). The soil sampling sites were selected from vicinity of the Bilaspur city naturally rich in starch. The fungus and bacteria isolated were screened on starch agar medium and the zone of hydrolysis was compared for prelimnary selection of the isolates. The molds were found to be the most potent group for Amylase production.

Keywords: *Amylase, isolation, prelimnary screening and starch agar medium.*

1. INTRODUCTION

Sincepast enzymes have been used as an efficient tool in industries for production of economically important product.Amylase is an enzyme that catalyses the hydrolysis of starch into sugars. Enzymes like amylases, carboxymethylcellulases and proteases are widely used in the industry for the manufacture of pharmaceuticals, foods, beverages and confectioneries as well as in textile and leather processing, and waste water treatment [1-2].The majority of the enzymes used in the industries are of microbial origin because of their more stable nature as compared to the corresponding enzymes derived from plants and animals [3].

2. MATERIALS AND METHODS

2.1 Isolation of microorganisms from different soilsamples: The soil samples for isolation of potent microorganisms were collected from places in and around Bilaspur 1.Flour Mill (FM), 2.Domestic wastes dumped soil (DWDS), 3. Agricultural soil (AS), 4.Agricultural waste soil (AWS),5. Prince Bakery waste dumped soil (PBWDS). The soil sample was collected in sterilized polythene bags.

2.2 Isolation and maintenance of the pure cultures: The isolated colonies were selected on basis oftheir fast growth and isolated on starch agar medium from five selected soil samples. The isolates were stored on slants at 4ºC till further use.

2.3 Plate assay method for qualitative screening: The method of Salwa*et al.* (2012) was followed for preliminary screening of the isolates by Starch hydrolysis Test. A blue/black or purple zone surrounding the growth indicates that starch is present and has not been hydrolyzed (-) and the organism did not produce the extracellular enzymes.Colourless zone indicates hydrolysis of starch.

3. RESULTS AND DISCUSSION

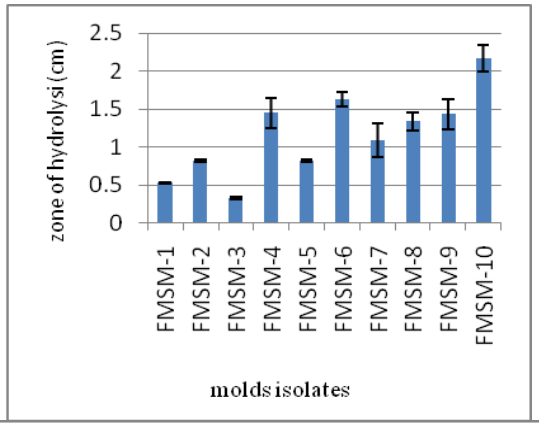
The isolation of microbes viz mold, bacteria and yeast were isolated from selected soil sampling sites listed in table.1. The total number of isolates of three microbial categories are given in table 1.

Maximum molds (36) were isolated from DWDS maximum yeasts (20) were isolated from DWDS. Maximum bacteria isolated (50) from agriculture waste soil as given in table 1.

Table -1. *Total microbes isolated from selected soil samples*

S.No.	Soil Sample	Molds	Yeast	Bacteria
1	Flour Mill (FM)	10	10	15
2	Domestic wastes dumped soil (DWDS)	36	20	11
3	Agricultural soil (AS)	28	12	48
4	Agricultural waste soil (AWS)	15	19	50
5	Prince Bakery waste dumped soil (PBWDS)	12	10	36
	Total	101	71	135

All the microorganism isolated from five selected soil samples were subjected for preliminary screening by plate method. The zone of hydrolysis measured in cm is given in fig.1 –fig.15 for molds, yeast, bacteria.



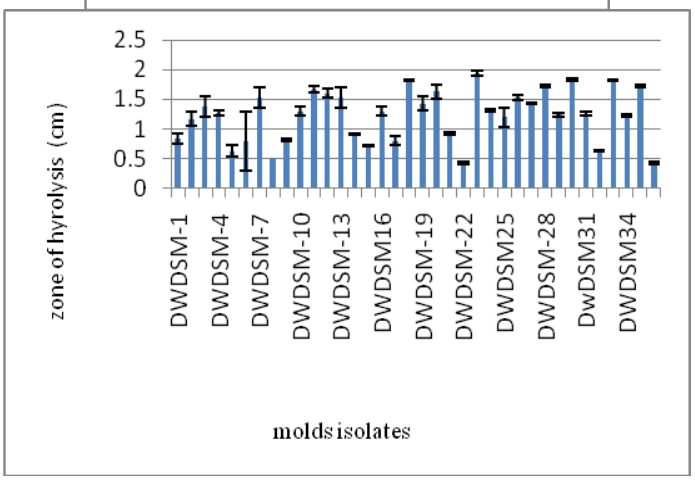


Fig-1. *Flour mill soil* **Fig-2:** *Domestic waste dumped soil*

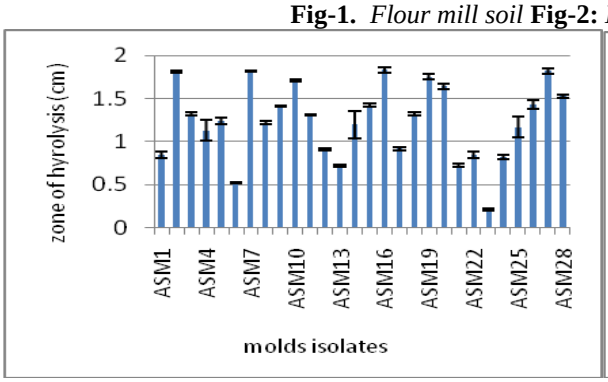


Fig-3. *Agricultural soil*

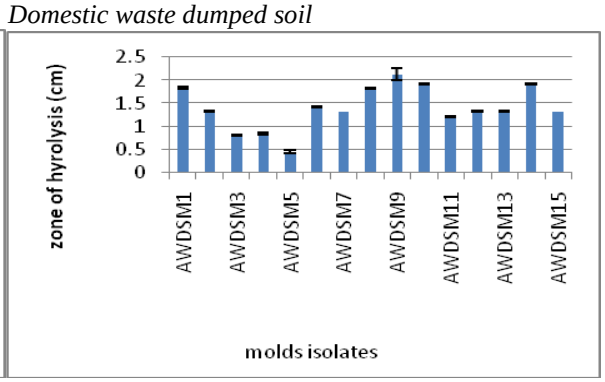


Fig-4. *Agricultural waste dumped soil*

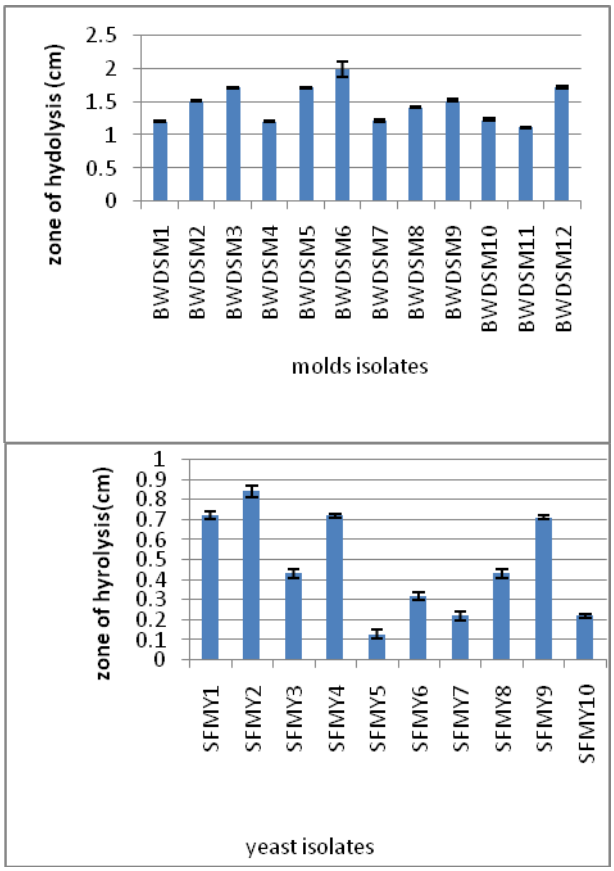


Fig-5. *Flour mill soil.* **Fig-6.***Flour mill soil*

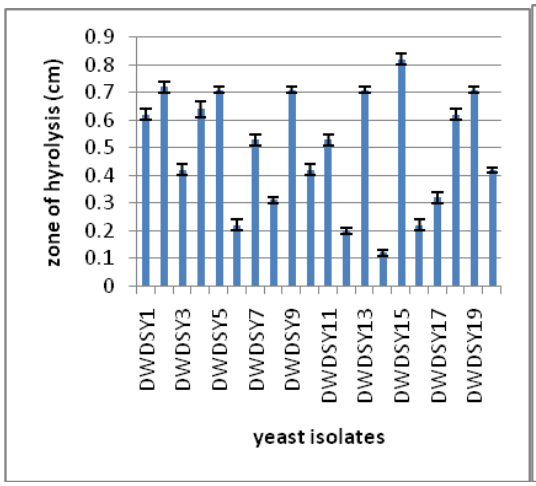


Fig-7. *Domestic waste dumped soil*

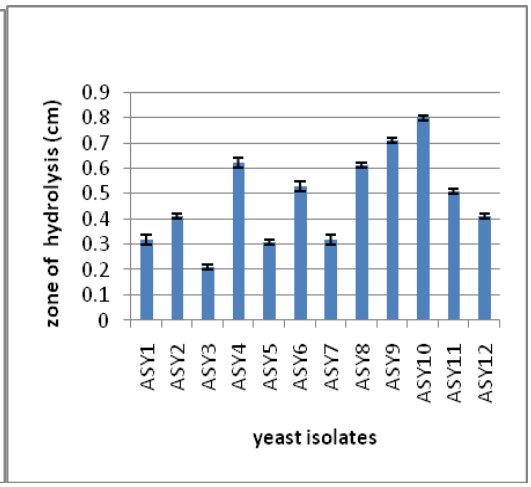


Fig-8. *Agriculture soil*

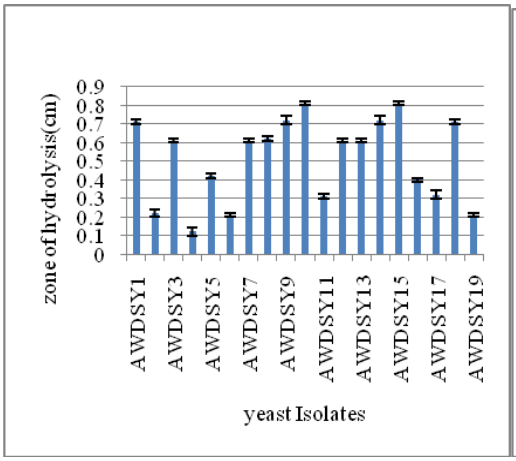


Fig-9. *Agriculture waste soil*

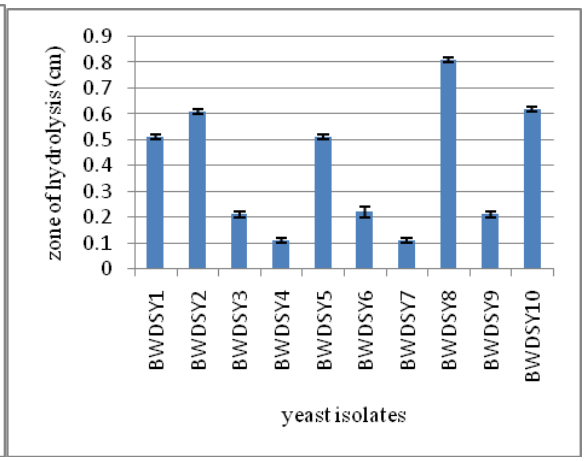


Fig-10. *Bakery waste dumped soil*

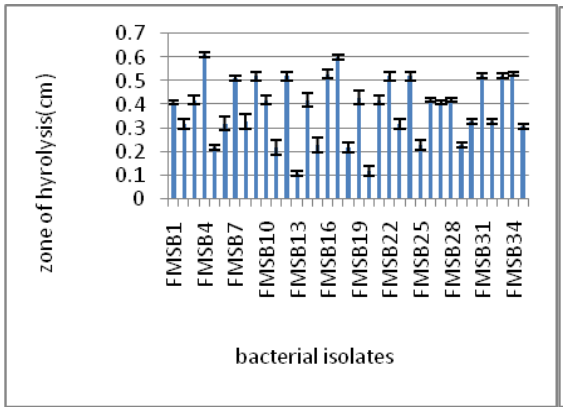


Fig-11. *Flour mill soil*

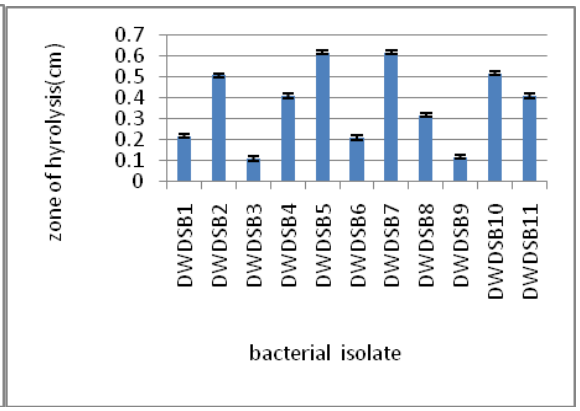


Fig-12. *Domestic waste dumped soil*

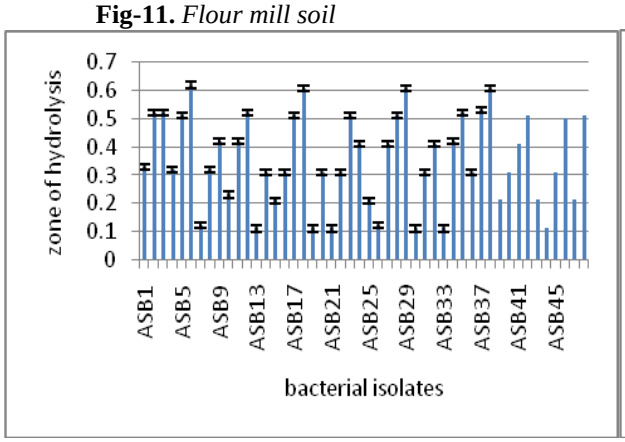


Fig-13. *Agriculture soil bacteria*

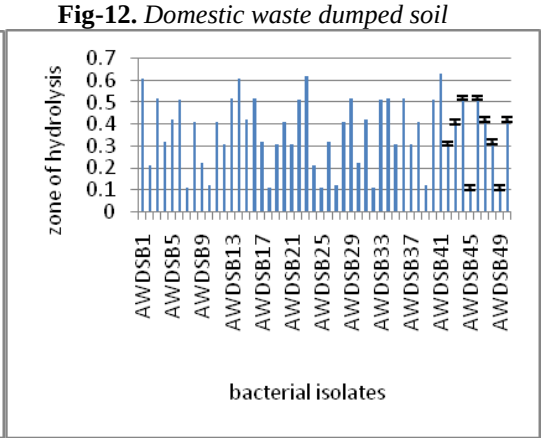


Fig-14. *Agriculture waste dumped soil*

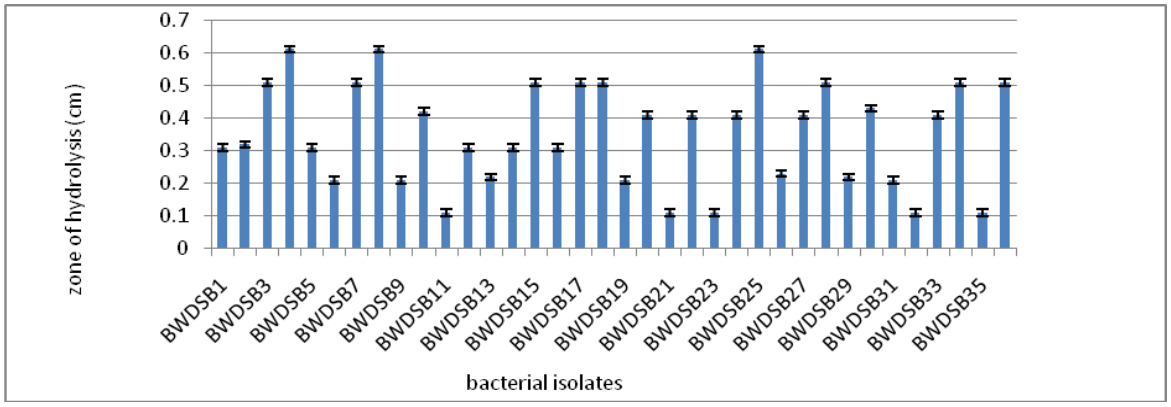


Fig-15. *Bakery waste dumped soil*

4. DISCUSSION

All the soil samples were excellent sourcesof microbes [4].The molds were found to be potent Amylaseproducers similar to the earlier findings [5].

The maximum zone of hydrolysis was observed to be 2.17 ± 0.17 cm.comparable to the previous reports [5-6].

5. CONCLUSION

The soil samples proved to be excellent sources of Amylases .The screened organism exhibited a natural potential to produce Amylase which can be increased by optimization and used for industrial applications.

REFERENCES

[1]. Wiseman, A: Handbook of Enzyme Biotechnology. New York: Ellis Horwood Ltd., 274–379.(1985).

[2]. Maarel, MJ**:** Properties and applications of starch-converting enzymes of the amylase family, Journal of Biotechnology 94 137–155.(2002).

[3]. Bailey JE, Ollis DF: Biochemical Engineering Fundamentals. Tokyo: McGraw-Hill Kogakusha Ltd. 155–220. (1977).

[4]. Mohapatra, B. R., Bapuji, M., Sree,A:Industrial Enzymes from Marine Sedentary Organisms Received, ActaBiotechnol. 23, 1. (2003).

[5]. Sundar R, Liji.T, Rajila.C, and Suganyadevi P: amylase production by aspergillusniger under submerged fermentation using ipomoea batatasInternational Journal of Applied Biology and Pharmaceutical Technology**,** Page: 180. (2009).

[6]. SalwaElaminIbrahim , Hassan Beshir El Amin, Elmutaz Nasir Hassan, Abdel Moneim Elhadi Sulieman: Amylase Production on Solid State Fermentation by*Bacillus Spp.* Food and Public Health, 2(1): 30-35, (2012).