Seminar

On

Production of Beta-amylase by *Trametes* species on Some Agricultural wastes.

By

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INTRODUCTION

- *Trametes* species is a wild edible mushroom genus of fungi in the family of polyporaceae (Ofodile, 2006).

- They are group of tough, woody, leathery and poroid mushroom but typically lacking a distinct stalk (Zjawiony, 2004).

- Some polypore have been found to be useful as enzyme production, much has not been reported on *Trametes* species.

Plate 1: Photograph of fruiting body of *Trametes* species

Methodology:

- The mushrooms (*Trametes* species) used were collected from forest in Ondo, Ondo State, Nigeria between June and December 2010.

- Proximate composition of agro-industrial wastes (Wheat bran, Rice bran, Saw dust and Palm kernel pericarp) were determined using the methods of A.O.A.C (2011).

Extraction of the enzyme

- The extraction was performed using solid state fermentation according to the method of Ibrahim *et al*. (2011).

Enzyme Assay:

- The filtrates of the fungus was assayed for beta-amylase using the modified dinitrosalicylic acid (DNSA) reagent method (Bernfeld, 1955 ; Zhou *et al*., 2009).

Table 1: Proximate composition (%) of selected agro-industrial wastes before and after solid fermentation with *Trametes* species

SAMPLE		MOISTURE	ASH	FAT	FIBRE	PROTEIN	CHO
WHEAT BRAN	A	8.79±0.02^{a}	6.32±0.02^{g}	2.40±0.01^{c}	3.18±0.02^{b}	19.54±0.10^{f}	59.79±0.06^{h}
	B	11.43±0.02^{d}	1.64±0.03^{c}	1.54±0.03^{a}	1.98±0.01^{a}	26.61±0.03^{h}	56.81±0.11^{g}
RICE BRAN	A	8.54±0.03^{a}	4.49±0.02^{f}	5.20±0.02^{e}	20.19±0.01^{d}	13.49±0.09^{d}	48.09±0.10^{f}
	B	10.53±0.28^{c}	1.91±0.01^{d}	2.13±0.02^{b}	18.88±0.01^{c}	22.54±0.02^{g}	44.01±0.32^{e}
SAW DUST	A	9.09±0.01^{b}	0.19±0.01^{b}	5.60±0.01^{f}	69.79±0.02^{h}	10.96±0.10^{a}	4.73±0.50^{a}
	B	12.83±0.01^{f}	0.14±0.02^{a}	3.23±0.00^{d}	67.03±0.03^{g}	12.54±0.02^{b}	7.24±0.07^{b}
PALMKERNEL PERICARP	A	12.37±0.03^{e}	14.16±0.02^{h}	8.11±0.02^{h}	45.03±0.02^{f}	12.85±0.01^{c}	10.04±0.48^{c}
	B	14.47±0.02^{g}	2.54±0.02^{e}	6.97±0.01^{g}	43.07±0.00^{e}	14.55±0.03^{e}	24.39±0.06^{d}

A: Sample before use (unfermented). **B:** Sample after use (fermented). Values are means of three replicates ±SD. The statistical significance was evaluated using Student's t-test and value of $p<0.05$ was considered to indicate a significant difference between the fermented and unfermented wastes.

Key:

CHO-CARBOHYDRATE

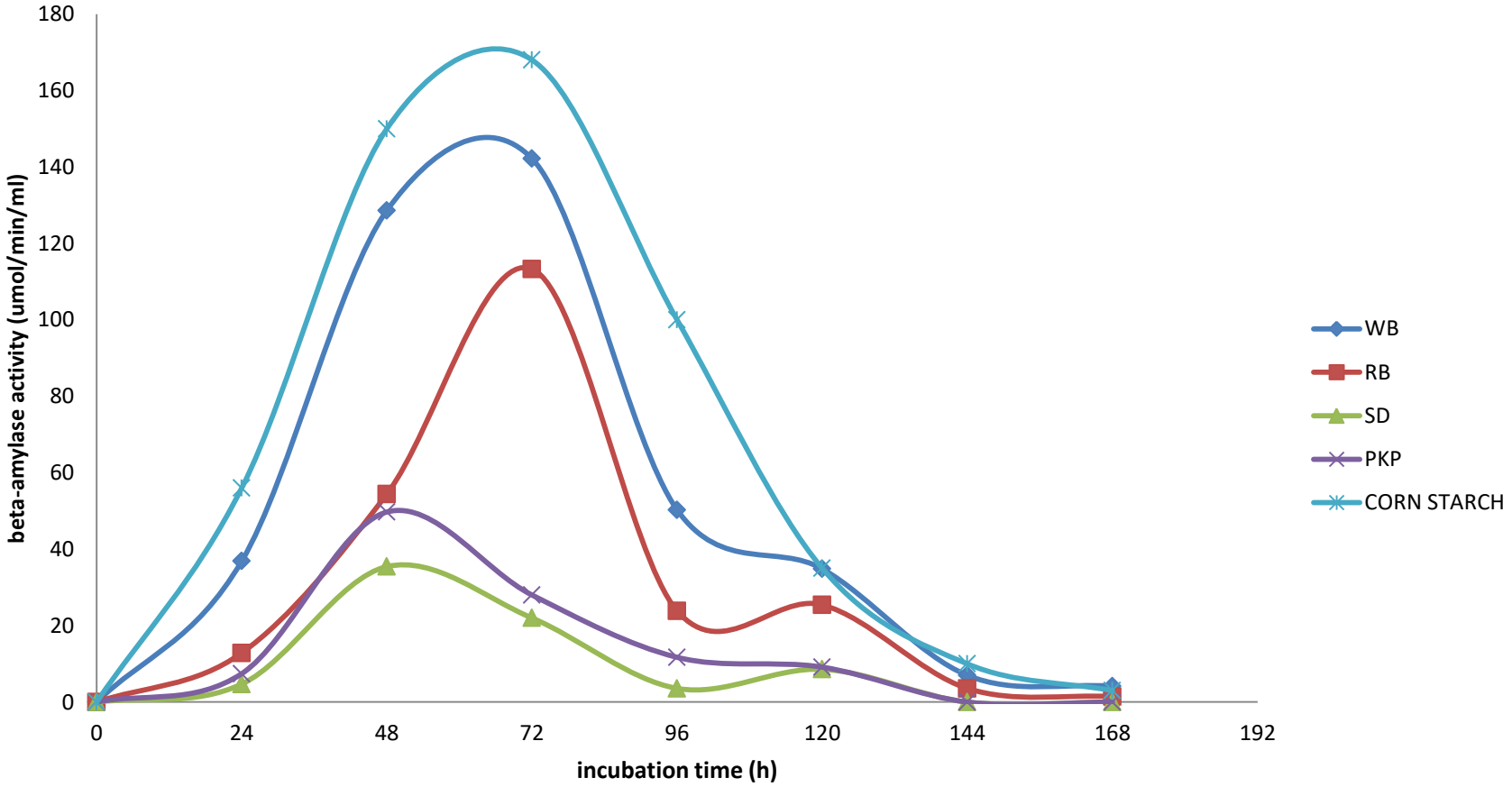

Figure 1: Time course profile of beta-amylase production by *Trametes* species in solid state fermentation using different substrates.

DISCUSSION

- Selected agro-industrial wastes were used for the production of Beta-amylase which was in line with the findings of Khandeparkar and Bhosle, (2008). They reported the use of agro-industrial wastes as substitutes for commercial known substrates for enzymes production.

- The biodegradation of wastes by associated enzymes was also reported in the research finding of Arotupin, (2007).

CONCLUSION AND RECOMMENDATION

- The result obtained from the bioconversion process of selected wastes revealed the potential of beta-amylase produced by mushroom as a biotechnological tool for the transformation of wastes into biological products.
- The enzyme sourced from this mushroom could be exploited as source of enzyme of industrial importance.

References

- **Arotupin, D. J (1991).** Studies on microorganisms associated with the degradation of sawdust. M. Sc. Thesis, University of Ilorin, Ilorin, Nigeria, Pp. 185

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- **Khandeparkar, R. D. S and Bhosle, N. B (2008)**. Isolation, Purification and Characterization of the Xylanase Produced by *Arthrobacter* Sp MTCC 5214 When Grown in Solid State Fermentation. National Institute of Oceanography, Dona Paula-403004, Goa, India, PP: 5.

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