GENERAL CONCLUSIONS

ACHIEVEMENTS

1. Total 35 yeast strains were isolated from molasses pits to have better activity of ethanol production using concentrated molasses sugars and at elevated temperature. Two strains identified as *Sacch. cerevisiae* have shown the desired activity of ethanol production at the expected conditions.

2. A series of novel and new additives were studied to increase the rate and productivity of ethanol in cane molasses batch fermentation. Out of these supplements skim milk-powder, chitin and waste mycelium or their combination have markedly improved the rate of ethanol production, efficiency; and have drastically reduced the alcoholic fermentation period.

3. Unconventional methods were attempted to improve the yield of ethanol by employing different categories of yeasts into fermentation process. A combination of binary cultures like top and bottom yeast was used to accelerate the rate of ethanol formation. This binary culture has accelerated the rate of ethanol without any additives in cane molasses batch fermentation.

4. A search was carried out for cheaper production of yeast cells and minimum inocula size required in alcoholic fermentation. A fairly sufficient yeast cells were collected from a cheaper medium 'MUMY', which contained molasses sugars, urea, magnesium sulfate and yeast extract. Likewise requirement of minimum but sufficient inoculum size has been worked out that will complete the fermentation activity within an expected period in molasses batch fermentation.
APPLICATIONS

1. The waste materials like chitin or fungal mycelium can be used as powerful catalysts to accelerate the rate and productivity of ethanol in alcoholic fermentation.

2. The novel additives can be used directly in batch or yeast recycle alcoholic fermentation to speed up the ethanol productivity.

3. The supplements can be applied directly to the traditional batch-fermentation technology and there will be no need for any modification to existing fermentors.

4. The fermentation period has been drastically reduced and hence more batches of fermentation can be operated.

5. The use of chitin or fungal mycelium will result in saving of labour, power and inocula size in alcoholic fermentation. Similarly use of a cheaper medium for yeast cells production, will reduce considerably the cost of ethanol production.

6. A new small scale industry may emerge for the utilization of waste materials like chitin or waste mycelium from antibiotic plants and thereby a problem of waste disposal can be solved indirectly.

7. The novel procedure of employing costless binary cultures in alcoholic fermentation, has accelerated the rate of ethanol production and fermentation period has been reduced to two-third.

8. Two promising yeast strains (Sacch. cerevisiae) have been made available through authentic culture collections (ATCC, NCYC OR NCIM) for industrial application.