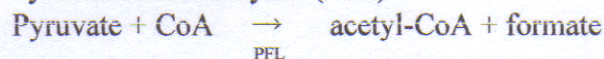
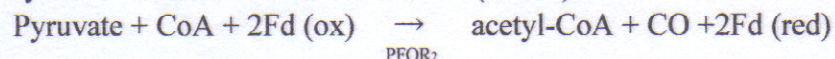


organic acids and alcohols, liberating H₂ and CO₂ in the process. Most of the microbial hydrogen production is forced by the anaerobic metabolism of pyruvate. Pyruvate biodegradation is driven by one of two enzymes (Hallenbeck & Benemann, 2002).

1). Pyruvate: formate lyase (PFL)

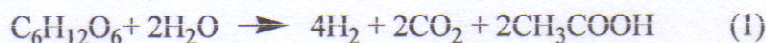


2). Pyruvate: ferredoxin oxido reductase (PFOR)



Ferredoxin is reduced, during pyruvate oxidation. The reduced ferredoxin transfers the electrons to hydrogenase enzyme which catalyzes the production reaction of molecular hydrogen.

In dark fermentation Organic acids cannot be degraded completely due to thermodynamic limitations (reaction 1), whereas the reaction of photofermentative hydrogen production is shown in reaction 2.



As shown above, in order to achieve a complete decomposition of carbohydrate integration with photofermentation can be employed.

CONCLUSION

Isolation of hydrogen producing bacteria have been conducted using activated sludge biogas sources. Proof through DNA tests showed that the bacteria isolated were *Bacillus citrulans*.

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