

Use Of Wheat Straw to Culture Methanogens

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Abstract—Methanogens are those anaerobes which are mainly found in the rumen of cattle, these are responsible for the production of methane gas by the degradation of cellulose. Methanogens of cattle rumen can be best isolated if they are provided with straw which is rich in cellulose and provide a natural raw material for the methanogens to act upon.

Here, straw extract is used instead of whole straw, if whole straw is used then the fibres in it will cause difficulty in discrimination of anaerobes.

I. COMPOSITION OF SHREE AGAR

- Straw – 20gm
- Black lentil – 10gm
- Yeast extract – 5gm
- NaCl – 5gm
- Agar – 20gm
- pH – 6.2 – 6.4
- Distilled water – 1000ml
- Media colour – pale chocolaty

Procedure

20gm of straw was boiled in 1000ml of water, till the colour of the water changes red. Then the straw and water were filtered using a muslin cloth.

In that filtrate 10gm of black lentil powder was added and 5gm of yeast extract was also added by continuous stirring.

Here, NaCl is used to maintain the osmolarity, and agar was dissolved after checking the pH.

Media was then autoclaved at 121 degrees Celsius for 15 – 20 minutes.

The media was poured in a sterilised petriplate and fresh cow dung at 10^{-5} and 10^{-6} serial dilution was spread on the two different plates and the plates were kept in the desiccator, here anaerobes were cultured by candle jar extension method.

II. OBSERVATION

Few anaerobic colonies were observed in the plate and not in control plate. Methanogens were releasing methane gas which can be smelled by the plates. Anaerobes also show a zone of hydrolysis around their colonies indicating the utilisation of cellulose.

III. RESULT

On the above observation the methanogens have utilised the cellulose and other nutrients of SHREE MEDIA for their growth.



Fig.1 shows growth of methanogens on Shree media.