**1. Prepare Culture Medium**

1.1 Solute the following components in 1 L distilled water:

 Proteose Peptone No. 3 10.0 g

 Beef Extract 10.0 g

 Yeast Extract 5.0 g

 D-Glucose 20.0 g

 Polysorbate 80 1.0 g

 Ammonium Citrate 2.0 g

 Sodium Acetate 5.0 g

 Magnesium Sulfate 0.1 g

 Manganese Sulfate 0.05 g

 Dipotassium Phosphate 2.0 g

 pH = 5.5 ± 0.2 at 25°C

1.2 Autoclave the culture medium at 121 °C for 20 minutes.

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**2. Prepare Over Night Culture**

2.1 Inoculate 200 mL of the culture medium with *Lactobacillus delbrueckii or L. plantarum.*

2.2 Incubate culture at 37 °C over night until there is a visible turbidity.

**3. Prepare Fermentation**

3.1 The fermentation is carried out under the following conditions:
- 37 °C e.g. in a water bath
- stirring at 100 rpm
- pH-controlled in the range of 5.0 – 6.0

3.2 Inoculate fermenter medium with overnight culture in relationship 10 : 1.
Task 1:
Take a probe and measure at t0 optical density at 600 nm, lactic acid- and glucose concentration at 340 nm.

 

**4. Fermentation**

4.1 Ferment for 3 days at 37 °C and a pH of approx. 5.5.

 For neutralization of produced lactic acid
add 2 M NaOH.

 Task 2:
Take a probe each 2 hours out of the fermenter and measure optical density, glucose- and lactic acid concentration
during fermentation.

If glucose is consumed, feed medium with
a glucose solution of 180 g/L so that glucose concentration is 10 g/L.