ABSTRACT

The present study concerned with the production of sodium gluconate in stirred fermentor by *Aspergillus niger*. Five different media were screened to produce maximum sodium gluconate. Of all the media screened, media containing glucose (12.5%) KH_2PO_4, (0.0188%), $(NH_4)_2HPO_4$ (0.038%), $MgSO_4.7H_2O$ (0.015%), Peptone (0.3%) and supplementation of EDTA (290ppm), Urea (0.3%) was found to be better as compared to other media, and was used to optimize the conditions of this production process. Maximum sodium gluconate (96.4g/L) was formed when fermentation was carried out with the said media at glucose concentration (12.5%), pH 6.5, temperature 30°C, aeration 300rpm, agitation 3vvm, using a 4% vegetative inoculums (24hrs old) at 128hrs. The maximum cell mass (5.56g/L), highest GOD (112U/g) at 72hrs and residual sugar 0.4g/L at 144hrs were obtained with the above media and conditions. Maximal production of sodium gluconate was accomplished with vegetative inoculums as spore inoculums required a germination time of 8-12hrs and gave lesser yields than vegetative inoculums.

For the optimization and production the dry cell mass, glucose oxidase units, residual sugar and sodium gluconate production was estimated, every twelve hrs of fermentation. Sodium gluconate detection was done using both the calorimetric (GOD assay) as well as chromatographic method (HPLC). Polarimetry was employed and found useful for recovery of the product.