Studies on some food plant wastes

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acid is one of organic acids, which plays an important role in food and pharmaceuticals industries. citric acid is used in food inti, such as soft drinks, candies, flavoring extracts; in pharmacy and in smaller ingredients in ink aal--d,es utdestries;printing and silvcllillw agent, reeently, most of citrie acid produeed by fetlllelltati-. is manufactured by using aspergillus niger. however, a new procedures, using different kinds of yeast strains have been elaborated by many investigators, thus, the ann of this investigation was to study potentialities of aspergillus niger and saccharomycopsis lipolytica for citric acid production. a trial was done to shed light on factors affecting citric acid production in both of shake flasks method and by fermentor method as a batch culture, results obtained during the course of this work which are confirmed by the statistical analysis (analysis of variance) could be summerized as follows : i. cane and beet molasses were found to be a suitable carbon source for citric acid production. the chemical analysis showed that molasses was very poor in nutrients in spite of they high ashcontent which extracted delirious effect on citric acid fermentation. treatments of molasses were carried out to reduce its delirious effect.2. 11jiebest cone ahatbm o’sdgms iltd’ohsses mediafotoci1rie.aeid.prodnet:ion was 15%. ~ prodoc:tion of citric acid was obtained after 8-10 days of incubation. where the aecumulatiortof the citric acid reached (4.84, 3.92 and 3.90,3.44 g/100 ml) for .• •»- saca tjji~ lilj!jfisu liptjlyttea by using, can i ,beet molasses, respectively. 3 mfaimum citric aeid wasprodbcedwidl-39”c whete (4.9j, ~ a.t 2.84, 237 g/100 dd)’ of citric aeid were omen zlifer”niger and saccharomycopsis lipolytica by using cane and beet molasses, respectively, 4. initial ph values of 5-6 were found to be the optimum to give themaximum production of citric acid where, (4.97, 3.86 and 3.87,3.43 g/ioo ml) were obtained by using asp.niger and saccharomycopsis lipolytica, in cane and beet molasses media, respectively. 5. addition of ammonium nitrate to the molasses media was found to be superior compared to the other different nitrogen sources in the production of citric acid. followed by ammonium carbonate, ammomum phosphate and ammonium chloride. the bestconcentration of ammonium nitrate giving the highest citric acidyield and conversion coefficient was 0.2%. 6. different types of alcohols such as ethanol and methanol were added to molasses media before the fermentation to increase citric acid yield. addition of methanol stimulated citric acid productionirole than etbaaol. it was fouod that 2% methanol was the of••’ ’lui coneentration wiii!ir gave the best yield of citric acid this yield was (39.76, 36.~1 and 33.12,25.72%) by asp.niger and saccharomycopsis lipolytica, in case of using cane and beet molasses media, respectively, t.••v &tjou of p il $ s pw, femleyaoidc in the absence of alcoaol considerably stimulated citric acid production. the highest yield of cdiib. asi8. wa oil•, + &.05-0.09%< pet rium ferrocyanide was ubeck 11iis. yield i b t f48.l8, 35.03 aod 33.14,28.91%) byusing asp.niger and saccharomycopsis lipolytica in cane and beetmolasses media, respectively, the aforementioned optimum conditions were used in both of shake flasks and fennentor, a- batch culture in shake flasks:asp.niger and saccharomycopsis itpotytica. growmg on molasses media as a batch culture in shake flasks were studied. thev incubated at 30°c for 10 days. the cane and beet molasses were diluted to 15% sugar, 0.2% ammonium nitrate and 0.05% potassium ferrocyanide were added and the ph value was adjusted to 6. the maximum citric acid production (9.49, 8.25 and 8.05, 8.00 g/i00 ml), yield of citric acid (63.29,55.03 and 53.67, 53.32%) and conversion coefficient (87.47, 81.86 and 76.64, 72.0 i%) were scored by asp.niger and saccharomycopsis lipolytica, grown on cane and beet molasses media, respectively, 2% methanol was used instimd of 0.05% potassium ferrocyanide under the same forementioned conditions. the citric acid production (8.73, 7.38 and

7.40,6.93 g/iooml), yield of citric acid (58.18,49.23 and 49.34, 46.18%) and conversion coefficient (76.72, 75.27 and 77.53, 69.35%) were scored by asp.niger and saccharomycopsis lipolync, grown on cane and beet molasses media, respectively, b- batch culture in the fennentor : asp.niger and saccharomycopsis lipolytica growing on cane and beet molasses media under the same aforementioned conditions werestudied as a batch culture in the fermentor, the maximum yield of citric acid (71.60, 71.78 and 68.14, 66.29%), conversion coefficient (91.58, 82.40 and 80.42, 73.29%), and production rate of citric acid (0.45, 0.45 and 0.53, 0.52 g/l/hr) were scored by asp.niger and saccharomycopsis ltpolytica, grown on cane and beetmolasses media, respectively by using 0.05% potassium ferrocyanide.2% methanol was used instead of 0.05% potassium ferrocyanide under the same conditions. the yield of citric acid (68.4 7, 68.16 and 59.33, 55.47%), conversion coefficient (87.29, 86.44 and 81.44. 67.71%) and production rate of citric acid (0.43, 0.43 and 0.46,0.43 g/lihr) were scored by asp.niger and saccharomvcopsis lipolytica in cane and beet molasses, respectively, m the whole aforementioned results we can concluded that the addibg 0.05% potassium ferrocy8bide to cane add beet molasses media fennenteci by-asp.niger and sacchui bin”eop.m lipolyncaled utidol’e-ciaie acid production in shorter time than a¥ing 2% methanol to the same media under the same conditions. we can concluded also that using asp. nigerled” to more citric acid production than saccharomycopsis lipolytica. caa im’ne is medium also was bettw tt beetmel8les medium cone citric acid production.