

COMPARATIVE STUDY ON DECOLOURIZATION OF DATE CONCENTRATES

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Introduction : in 2003 Mohamed A. Al-Farsi use 5 methods of clarification: filtration using a filter press, hot liming and filtration at 60 C, cold liming and filtration at 25C, powder-activated carbon and finally granular activated carbon, the result show that the best way to remove date juice colour is the use of granular activated carbon while in Hot liming due to alkalinity and high temperature produce undesirable colour. (1) In 2012 Nasehi et al try to find optimum condition to remove Dark colored compounds in date syrup by using powdered activated carbon(PAC) at different operating conditions including different temperatures (30, 40, 50 and 60C, and different PAC concentrations (0.04, 0.06, 0.08, 0.1 and 0.12 g/ml). they conclude that the adsorption process is a monolayer adsorption of colored compounds at the outer surface of PAC. The experimental results have proved that, the maximum of colored compounds removal (95%) is obtained at the temperature of 60C with PAC dosage of 0.06 and 0.1 g/ml (2). use of Ion Exchange Resins and Bone Char was investigated at 2010. Decolourization with bone char need more contact time(CT) than others and maximum decolourization ratio will be 89 % by 30 % bone char and CT 60 min. Studies on the decolourization ratio proved that the anionic resins have a slightly lower selectivity for colourants unlike bone char and with 30 % resin (CT 30-60 min), 20 % (CT 60 min) this factor will be 87.6 %.(3) The aim of this study is to remove the colourants by the use of three different method consist of activated carbon and lime separately and in combination with each other. Find the best methods and comparison of colour removal percent of two concentrates.

MATERIALS AND METHODS: Powdered activated carbon (PAC) and lime was prepared from Isfahan sugar industry. date concentrates were purchased from local store. the brix fixed on 40 with Distilled water and three different methods were used: 1. use of PAC at 60 °C in 0.2% brix and use of magnet stirrer for 20 min. 2. use of lime 20% at 25C until pH=9.5 after about 30 min pull down the pH to 7.5 by the use of phosphoric acid and filtration at room temperature. 3. combination of 1 and 2

RESULTS AND DISCUSSION: In order to determine colour removal result final samples filtered by a paper Imbued with bentonite. afterward 2100 spectrophotometer were used in two Wavelength ;560 and 420nm. The result show 20% decolourization at 560 and 34% at 420 by activated carbon. this result show that activated carbon can remove yellow compound like carotenoids more than antocianins(the red ones). While use of lime and carbon together increase the adsorption at 560 nm due to the alkaline conditions and production of dark red compound from antocianins decomposition. While at 420 in this situation 20 % decolourization occur. In Lime treatment alone new coloured compound produced. turbidity was measured by the use of Hanna HI9370, USA result indicate that 50 % of turbidity was Eliminated by lime while in samples with activated carbon treatment Increase in turbidity was observed because of passing the carbon from filter.



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