

# Step towards Better Future: Treating the Waste Water Generated from Dairy Industries using Fruit Peels

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**Abstract:** *Now-a-days water scarcity is the major problem faced by world; hence it is important to treat waste water generated from various sources before it is discharge. Among various techniques, adsorption is a fast, inexpensive and universal method. The method followed for removing the useful organic substance include Dehydration and carbonization, investigating effect of pH, time, adsorbent dosage and particle size. The review of study on removal of organic substance from dairy waste using de-hydration, carbonization and batch extraction method is discussed in this paper. As noted, most researchers deal with the batch extraction, as this process shows good result for removal of different organic and inorganic contaminants from dairy waste. In batch extraction it was observed that the combination of banana and orange peel provides the better results. The carbonization method is found to be more efficient than the de-hydration method. The carbonization method is efficient because carbon is strong oxidant and has a unique pores structure with absorbs the organic substance on its surface easily. For the removal of turbidity, total suspended solids [TSS], biochemical oxygen demand [BOD] and chemical oxygen demand [COD] orange peel was found to be more efficient than banana peel in all the methods this is due to the characteristics of orange peel, the orange peel contain fibre which has more hydroxyl radical, hence more adsorption capacity. But the combination of orange and banana peel in 1:1 proportion act as a best adsorption, even better than orange peel alone.*

**Keywords:** Fruit Peels, BOD, COD, TSS, Turbidity, etc.

## REFERENCES

- [1] Ms.P. Sasirekha, V. Mutheeswari, S. Sivapackiam, S. Soundharya, J. Ragheljebamariyal, Treatment of Industrial Waste Water by Using Orange Peels & Fish Scales. IJSRD - International Journal for Scientific Research & Development| Vol. 5, Issue 01, 2017.
- [2] Pranav D. Pathak, Sachin A. Mandavgane and Bhaskar D. Kulkarni [2015], Fruit peel waste as a novel low-cost bio adsorbent, published in journal Rev Chem Eng 2015; 31(4): 361-381.
- [3] RizkiIbtidaPrasetyaningtyas, Saskia Anindya Putri, FaeghehMoazeni& Shirley Clark, Fruit peels as natural adsorbents to remove chromium (Cr<sup>6+</sup>) from synthetic textile wastewater. In G. F. Scott, & W. Hamilton (Eds.), World Environmental and Water Resources Congress 2019 (pp. 190-200). American Society of Civil Engineers (ASCE).
- [4] PongthipunPhuengphai, ThapaneeSingjanusong, NapapornKheangkun, AmnuayWattanakornsiri. 2021: Removal of copper(II) from aqueous solution using chemically modified fruit peels as efficient low-cost biosorbents. Water Science and Engineering, 14(4): 286-294. doi: 10.1016/j.wse.2021.08.
- [5] Mondal, N.K. Natural Banana (Musa acuminata) Peel: An Unconventional Adsorbent for Removal of Fluoride from Aqueous Solution through Batch Study. Water Conserv Sci Eng 1, 223–232 (2017).
- [6] Mohapatra Debandya, Sabyasachi Mishraand NamrataSutar, Banana and its by-product utilisation: an overview, Journal of Scientific & Industrial Research, Vol.69,May2010,pp.323-329.

- [7] Jatto, E.O., Asia, I.O., Egbon, E.E., Otutu, J.O., Chukwuedo, M.E. and Ewansiha, C.J. Acaedmia Arena., 2010,2(1):32–36.
- [8] Velmurugan, P., Rathina Kumar, V. &Dhinakaran, G., International journal of environmental sciences.,2011, 7(1):1492-1496.
- [9] Dr. K.M. Gopala Krishnan, Mr. M. Dhivakar Karthick, treatment of dairy waste water using natural adsorbent like fruit peel, International Journal of Science Technology and Management, Volume No.10, Issue No.03, March 2021.
- [10] Kanawade, S.M. &Gaikwad, R.W., International Journal of Chemical Engineering and Applications.,2011, 2(3):202-206.
- [11] AbdurRahman, F., Akter, M. and Abedin, M.Z., International Journal of Scientific & Technology Research.,2013,2(9), 47-50.
- [12] Bazarafshan, E., Moein, H., Mostafapour, F.K. and Nakhaie, S., Journal of Chemistry, 2013.
- [13] Wikipedia, Freundlich equation, [http://en.wikipedia.org/wiki/Freundlich\\_equation](http://en.wikipedia.org/wiki/Freundlich_equation), 2014.
- [14] Wikipedia, Water. [Online], Available form: <http://en.wikipedia.org/wiki/Water>, 2014.
- [15] World Health Organization, Environmental management., [http://www.who.int/denguecontrol/control\\_strategies/environmental\\_management/en/](http://www.who.int/denguecontrol/control_strategies/environmental_management/en/), 2014.