A New Concept of Packaging- Solving the Problem of Excessive Plastic

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Purpose Nowadays, people's dependence on plastics has become more serious. Also, during COVID-19, the number of plastic packaging has led to overuse and waste. Its slow decomposition increases the problem of excessive plastic, which harms the environment. Procedure We used sweet potato starch to make natural edible soluble (NSE) piece and stick them with NSE glue to form NSE packaging. Data was analyzed by three experiments:1.Testing the effect of NSE solution on plant growth by mung bean.2.Testing the effect of NSE solution on animal growth by zebrafish.3.Detection of bacterial content in the NSE sample. Results Compared with the mung bean’s growth rate of the tap water (6.3cm), the growth rate of NSE solution (6.5cm) is better. Compared with the zebrafish’s survival rate in the control device (ddH2O) [83.3%], the survival rate in NSE solution (Concentration: 5x105μM/L) [93.3%] is much greater. In the detection of bacterial content, after 24 hours, the result is 24MPN/100g.The result of the bacteria content of 3M Petrifilm Coliform Count Plate is 1.6×104CFU/mL.The quick-check film didn’t change its color, so it doesn’t contain E. coli. Conclusion NSE is non-toxic, so it won’t affect the growth of plants and animals. NSE can decompose in soil without any adverse effects on it. NSE tableware and medicine packaging can decompose in hot water (above 80 °C) in 3 seconds. NSE is low cost, the cost of making a NSE piece which is 20x5cm is lower than $0.1.

Awards Won:
Fourth Award of $500