Bio-Absorbent from Spondias pinnata Gum for Pet Pads

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Pet pads are used to absorb sewage from pets. The commercially available pads contain the layer of synthetic polyacrylate with super absorbent property but is slowly degraded and hazardous. Pets have the risk to ingest this harmful polymer from their nibbling behavior. Thus the aim of this work is to develop a new bio-absorbent that is eco-friendly and non-toxic with high ability to absorb pets'sewage. We observed that Spondias pinnata bark exudates gum which is insoluble but swelled by the rain. When compared absorption property, Spondias gum could absorb various solutions found in animal secretion such as water, sodium chloride, blood, urine, and milk similarly to synthetic polymer but higher than guar gum. The gum at 0.03 mm is suitable particle size for using. Brine shrimp toxicity assay demonstrated that Spondias gum had lower toxicity with the LD50 value of 19.70 g/l which was higher than that of the superabsorbent at 11.80 g/l. The biodegradation test of the gum showed that it could degrade faster than commercial superabsorbent. We then made pads replacing the synthetic polymer with plant gum and asked dogs' owners to use them for their dogs. Satisfaction with the efficiency of this bio-absorbent pads was reported, reduction of nibbling behavior was noticed. Interestingly, production cost was 55% lower than buying the commercial pads. This new pads made with local materials can help reduce the use of synthetic polymer that causes environmental pollution and is safety for pets.

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