First discovery of 'animals-only' pigment bilirubin in plants

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In a first-of-its-kind discovery that overturns conventional wisdom, scientists in Florida are reporting that certain plants — including the exotic “White Bird of Paradise Tree” -- make bilirubin. Until now, scientists thought that pigment existed only in animals. The finding may change scientific understanding of how the ability to make bilirubin evolved, they say in a report in the *Journal of the American Chemical Society*.

In the new study, Cary Pirone and colleagues note that bilirubin is a brownish yellow substance resulting from the liver's breakdown of hemoglobin, the red pigment that carries oxygen in the blood. Parents know bilirubin as the stuff that discolors the skin of newborns with neonatal jaundice, sometimes requiring phototherapy, treatment with light. Bilirubin also gives a yellowish tinge to the skin of patients with jaundice resulting from liver disease. Until now, scientists never dreamed that plants, as well as animals, produce bilirubin.

The researchers used two powerful laboratory techniques, liquid chromatography and nuclear magnetic resonance, to detect bilirubin in fruit of the white bird of paradise tree. The fruits contain unusual, orange-colored, furry seeds, and bilirubin turns out to be the coloring agent. They also found the pigment in two closely related plant species. The discovery may stir evolutionary research to understand why and how plants make what everyone regarded as an animals-only pigment, they suggest.

More information: "Animal Pigment Bilirubin Discovered in Plants" Journal of the American Chemical Society

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