2006 TAIWAN INTERNATIONAL SCIENCE FAIR

CATEGORY : Chemistry

PROJECT : Peanut Hull as an Antioxidant in Metal Coats

SCHOOL : Philippine Science High School-Main Campus

FINALISTS : ROBERT GLEN R. ABESAMIS

COUNTRY : Philippines

ABSTRACT OF EXHIBIT
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Category: **CHEMISTRY**

Title: **PEANUT HULL AS AN ANTIOXIDANT IN METAL COATS**

Name: **Robert Glen R. Abesamis**

Country: **Philippines**

A study was done to determine if the antioxidants found in peanut hulls could be used for lessening the corrosion rate of iron. Peanut hulls were ground then divided into two batches, P1 and P2, then oven-dried at temperatures of 50°C and 60°C, respectively. The moisture content of each batch was then determined before performing methanolic extraction to isolate the antioxidants. Eighteen iron strips of approximately the same surface areas were thoroughly cleaned and weighed, then divided into six groups. The iron strips in the first five groups were respectively coated with pure extract from batch P1; a 1:1 mixture of P1 extract and turpentine; pure P2 extract; a 1:1 mixture of P2 extract and turpentine; and pure turpentine. No treatment was done on the sixth group. All iron strips were exposed to air to allow formation of rust thru atmospheric corrosion. After 12 days, the iron strip were cleaned and weighed; then the individual corrosion rates of the metals were determined.

The corrosion rates of the metals treated with pure P1 extract, the P1-Turpentine, and the P2-Turpentine mixtures were found to be significantly lower than the corrosion rates of the metals without treatment, at 5% level of significance in a t-Test for independent samples. The average corrosion rates of all the treated metals were found to be lower than that of metals treated with pure turpentine, though not significantly. The corrosion rate of the metals coated with turpentine was not significantly less than that of untreated metals. The corrosion rates of the metals were also found not to be dependent with the moisture as there was no significant difference in the mean corrosion rates of metals treated with P1 extract and those treated with P2 extract, with or without turpentine.

The project has shown that peanut hull extracts can be used to lessen the production of rust on the surface of the metal. Moisture content of the hulls was not found to be a factor in lessening the corrosion rate.

評語

Use of Extract from Peanut Hull as antioxidant for anticorrosion reagent is a good idea , The method to determine the corrosion may require some quantitative data Comparison with commercial antioxidant such as paints may help to upgrade the quality of the work .