Detecting Spoilage of Aspirin Using Color Change

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This study aims to find an indicator that is easily read, to be added to the aspirin packaging in order to warn the patient of its spoilage to prevent them from taking it. The study methodology consists of 3 parts. First, research showed that Aspirin is one of the most common drugs in use today. The USPSTF has found evidence that aspirin decreases the incidence of coronary heart disease in adults who are at risk. It was found that the medicine could be spoiled before the expiration date if stored in incorrect circumstances due to the old age of some patients, or lack of awareness, etc. Second, we found that the active ingredient in aspirin is produced from a chemical reaction of acids (Acetic Anhydride and Salicylic Acid) and if heated or extremely aged, a reverse chemical reaction occurs that separates them once again. Then we started searching for a way to indicate the separation of the acid that would be easy and practical for the patient to read, and not affect the chemical and physical composition of the tablet. Litmus paper, Methyl red, and Phenol Red were added to 3 different tablets of Aspirin in a plate and were placed in a stability chamber at the temperature of 40 degrees Celsius for 48 hours, then the results were observed. The Litmus paper changed color from blue to red without affecting the chemical composition of the tablet indicating acid separation and spoilage of the medicine. In order to benefit from the indicator, the package of the medicine was designed to have litmus paper between the tablet and the strip to be easily viewed by the patient to warn them from taking it.