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Allium cepa. L as acid-base indicator

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In this study, a facile and environmentally friendly method was reported for manufacturing of natural acid-base indicator by preparing *Allium cepa. L* juice, which provided the anthocyanin pigment. The anthocyanin pigment was extracted via boiling process. In detailed, the *Allium cepa. L* was cut into small fragments. Then, the small fragments of *Allium cepa. L* was boiled in distilled water in order to extract the anthocyanin pigment. This process was followed by the addition of different solutions; acidic solution, base solution as well as neutral solution was added into separate test tubes filled with extraction of *Allium cepa. L* juice. The obtained *Allium cepa. L* juice was then used as the pigment for the acid-base indicator. The pH of the solution can be determined by observing the colour change in the *Allium cepa. L* juice. The light purplish colour of *Allium cepa. L* juice turned into red colour when added with hydrochloric acid; the purplish colour of the juice turned into yellow when added with sodium hydroxide; the original colour of *Allium cepa. L* did not undergo any observable colour change when distilled water is added into it. The *Allium cepa. L* exhibited excellent colour change property with chemical solutions. These colour changes make the *Allium cepa. L* attractive for applications in acid-base indicators.

General colour of *Allium cepa L* Juice is yellowish

Type of solution	Colour change of diluted <i>Allium cepa L</i> Juice	Colour change of concentrated <i>Allium cepa L</i> Juice
Distilled water	Yellowish	Purplish solution
Hydrochloric acid	From yellowish solution to light pink solution	From purplish solution to reddish-pink solution
Sodium hydroxide solution	From yellowish solution to dark yellow solution	From purplish solution to dark yellow solution

Biography

Koo Thai Hau is a student of Gan Lui Nam from Form 6 Centre of SMK Taman Johor Jaya 1, having 13 years teaching experiences in pre-university education. She actively promotes learning through research among students. She is currently pursuing Doctoral in University Technology Malaysia. Koo Thai Hau and Ling Jia Yi are students from Form 6 Centre of SMK Taman Johor Jaya 1. They had been the members of Science and Mathematics Society. From the society, their interest towards the science is sparkling and led them to the path of keeping learning science after secondary studies. In their pre-university education, they obtained a chance to join the research team of the school (Form 6 Centre of SMK Taman Johor Jaya 1). The research is mainly based on the natural plants functioning as acid-base indicators and the main materials are *Allium cepa L.* (onions). The research is done in the wish that the cost of acid-base indicator using commonly can be reduced. This research had successfully won a silver medal in the Third International Innovation, Design and Articulation competition.

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