

## Review Form 1.6

Journal Name:	Asian Journal of Applied Chemistry Research
Manuscript Number:	Ms_AJACR_93232
Title of the Manuscript:	UV/visible Spectroscopic Studies and Analytical Evaluation of Dicliptera Verticillate Leaves Extracts as Eco-friendly Indicator for Acid-Base Titration
Type of the Article	Original Research Article

### General guideline for Peer Review process:

This journal's peer review policy states that **NO** manuscript should be rejected only on the basis of '**lack of Novelty**', provided the manuscript is scientifically robust and technically sound. To know the complete guideline for Peer Review process, reviewers are requested to visit this link:

(<https://www.journalajacr.com/index.php/AJACR/editorial-policy> )

### PART 1: Review Comments

	Reviewer's comment	Author's comment (if agreed with reviewer, correct the manuscript and highlight that part in the manuscript. It is mandatory that
<b>Compulsory</b> REVISION comments	<p>The idea of the publication is sound, it could be useful for didactic or educational purposes according to the style in which it has been written. The style and content should be changed to consider it as a research publication.</p> <p>In general, the paper is mainly informative, with little contribution on research aspects and the methodology used should be substantially improved.</p> <p>The referenced bibliography, although current, corresponds mostly to journals of limited scope and with little diffusion. It is understandable that researchers do not have access to high-priced subscription journals, but there are quite a few Open Access journals of worldwide diffusion with free access. Examples very close to the subject of this paper (research, educational and divulgative): doi:10.5923/j.jlce.20130102.04, doi:10.1155/2019/4061927, doi:10.1155/2019/2031342, <a href="https://www.thoughtco.com/home-and-garden-ph-indicators-601971">https://www.thoughtco.com/home-and-garden-ph-indicators-601971</a>.</p> <p>The results presented and their analysis are very general. There are some data that appear to be wrong or with a lack of information. Major improvements should be made in the writing, results and discussion of the paper. In my opinion, I recommend</p>	

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**Minor** REVISION comments

The idea of the publication is sound it could be useful for didactic or educational purposes according to the style in which it has been written. The style and content should be changed to consider it as a research publication.

In general, the paper mainly informative, with little contribution on research aspects and the methodology used should be substantially improved.

The referenced bibliography, although current, corresponds mostly to journals of limited scope and feasibly with little diffusion. There are quite a few Open Access journals of worldwide diffusion with free access. Examples very close to the subject of this paper (research, educational and informational): doi:10.5923/j.jlce.20130102.04, doi:10.1155/2019/4061927, doi:10.1155/2019/2031342, <https://www.thoughtco.com/home-andgarden-ph-indicators-601971>.

The results presented and their analysis are very general. There are some data that appear to be wrong or with a lack of information. Major improvements should be made in the writing, results and discussion of the paper. In my opinion, I recommend a major revision before the paper could be published. Possible improvements are listed in more detail below. All this is not counting typos and minor linguistic improvements.

It would be worth comparing the results with other natural pH indicators described in the literature both in the literature cited in the paper and in other additional references.

It would be interesting to test the extraction with other solvents, for example cyclohexane, acetone and others having different properties, in order, to check their influence on the development of the pH indicator.

Since the extract is a "natural" indicator, as indicated in the introduction section it degrades easily, Therefore, it would be interesting to investigate its stability over time. This would lead to the development of a methodology for their better conservation and use (dark laboratory flasks, absence of oxygen, storage temperature, etc.), achieving a truly ecological effect.

In the experimental section, it would be necessary to describe the chemical compounds used unequivocally, indicating their CAS number, purity, origin, describe the pore size of the filter paper used, etc. In this way, other researchers will be able to repeat the experiments exactly. The room temperature value has to be specified even indicating their fluctuation range.

Results and discussion.  
UV-VIS spectroscopic analysis.

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**Optional/General** comments

Since it is a "visible indicator", it is not necessary include in the spectra the UV and IR regions. The spectra should be scaled between 350nm and 750nm.

There seems to be a problem with the "Figure 1". In fact, there are two: one corresponds to a picture of the plant and the other to the UV-VIS spectra. In the second Figure1, it is clear that the spectra are clamped to a maximum absorbance value of 0.5. This should be corrected, and the corresponding peaks with a Gaussian or Lorentzian curve shape should appear. Table 1 gathers the absorbance values also with max values of 0.5. The spectra have to be repeated with the appropriate dilutions (notating their values for their easily comparison) to better known the max wavelength and its relative intensity. Perhaps the spectra could be presented in two figures, one for EE, EEA and EEB, and another figure for HWE, HWA and HWB. In this case it would be advisable using the same scales for the axes, for a clearer and simpler comparison.

Titration.

The solutions used are not contrasted with any primary standard. It is mandatory, if the objective is quantify, to use a standard. In the case of acid-base titrations potassium hydrogen phthalate, PHK, is suitable. The bases (NaOH and NH<sub>4</sub>OH) can be titrated first and next the acids solutions with the titrated base.

In this sense, the volume values expressed in Table 2 are not understood even when using synthesized indicators. The concentrations of acid and base are the same and in principle there should be no difference for the two indicators. Obviously, 25mL of 0.5M NaOH are neutralized with 25mL of a monoprotic acid. Thus, the value should be 25.0mL, and therefore not be above 30mL, as shown in the Table 2, this is especially noticeable at the first row. In the last row, the buffer effect of sodium acetate, coupled with the pKa of acetic, 4.75, closer to the color change zone of Methyl Orange (pH color change between 3.2 and 4.4) different for the Phenolphthalein (pH color change between 9.2 and 10.0) some difference in volume might be appreciated, but certainly not 2.4mL. Moreover, in Table 2 the term "charge" appears several times and should be changed to "change".

It should be noted that from the glassware employed for the titrations, a burette, without further qualification, this precision of this laboratory material is 0.1mL, in the best cases 0.05mL, but not 0.01mL, even if they are originated from repeated measurements. This precision should be adjusted.

The possible influence of atmospheric CO<sub>2</sub>, which can affect acid-base titrations and which is described extensively in the literature, is also not mentioned and/or discussed.

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	<p>Finally, in this same table, it seems that the indicator extracted from the plant is not effective for solutions containing NH<sub>4</sub>OH. Could there be any specific reaction between the plant extract with this base kind? It should be noted that, under the experimental conditions described, the extract is initially added to the basic solution contained in the conical flask.</p> <p>The reactions 1 to 4 may be left out of the text as they are quite common in the field.</p> <p>In general, the arguments used to describe the analysis of the results and their discussion are more typical of an informative journal than a scientific research journal. A deeper and more rigorous analysis of the data should be carried out. Thus, it would be necessary to completely remake the data with the recommendations mentioned above. This would allow the authors to present the results more in accordance with scientific methodology.</p> <p>Conclusions.</p> <p>Regarding the conclusions, the last sentence of the section clarifies the sense in which this paper seems to have been written, for secondary education and with an informative character.</p> <p>In this section, I diverge with the conclusion that the prepared indicator offers similar results to commercial synthetics ones. I would argue that, even under the stated conditions, the plant extract indicator does not provide results comparable to the precision and accuracy required for acid/base titrations.</p> <p>In any case, the idea of the paper is sound, but it needs to be developed with greater depth and thoroughness under the scientific methodology, to be published.</p>	
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### PART 2:

	Reviewer's comment	Author's comment (if agreed with reviewer, correct the manuscript and highlight that part in the manuscript. It is mandatory that authors should write his/her feedback here)
Are there ethical issues in this manuscript?	<i>(If yes, Kindly please write down the ethical issues here in details)</i>	

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