

A Novel Flow Cytometry-Based Method Analyses Heinz Bodies

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Certain morphological changes in the erythrocytes, first described by the author, have been noted in both experimental animals and in humans. The Heinz bodies, often known by various common names, seem to be newly formed elements that originate either from the membrane of the red blood cells in case of an irreversible injury by a poisonous agent. The chemical nature of Heinz bodies is often not certain, but they seem to contain denatured proteins. They often occur in blood, in the absence of methaemoglobin without anaemia, where both phenomena occur independently. Elimination of these bodies from the blood is often achieved through the destruction of the spleen, usually resulting in the increase of the organ.

The Article

The article, "A Novel Flow Cytometry-Based Method Analyses Heinz Bodies," by D. Palasuwan, A. Palasuwan, A. Charoensappakit, and E. Nulsri (2017), seeks to address the scientific test for Heinz cells. The research problem being addressed in this paper is whether Heinz bodies induced by acetylphenylhydrazine emit fluorescence could be analysed using flow cytometry. The introduction of the paper, which agrees with the title, appears to be of great informative worth. However, the main objective is not clear to an ordinary reader. Therefore, more than a few readings are required to understand why the authors felt this research needed to be conducted. The research was limited to the capabilities and resources of the researcher.

Even though the author provided no clear literature review for the paper, he used a good number of appropriate references were utilized in the entire article. The references made a great contribution to the overall understanding of the subject as well as the reasoning behind establishing the major problem.

It is clear from the introduction of the article that this is not a simple issue. However, the author maintains a specific focus on introducing the main subject in the first few paragraphs. The author begins by pointing out that Heinz bodies are very important when managing or diagnosing patients. He proceeds to indicate that microscopic analysis of Heinz bodies has its advantages and drawbacks, showing the essence of having advanced methods of analysis. Moreover, the authors investigated the use of flow cytometry in the process of examining Heinz bodies. The motivations of researchers and also individual scientists to focus on future advancements in their processes.

To such a complicated subject, the author sums up their research by pointing out that, even though

the study showed a significant increase in Red blood cells' positive for Heinz bodies of samples with low G6PD, it fails to show the significant dissimilarity between low G6PD patients and the control agent. Therefore, the final outcome might be due to the difference in the severity of low G6PD. Therefore it is important for future studies to use flow cytometry to evaluate the relationship between G6PD deficiency in patients and the number of red blood cells that are positive for Heinz bodies. Palasuwan et al. (2017) concluded that acetylphenylhydrazine-induced Heinz bodies can emit fluorescence detectable by flow cytometry and noted that additional factors may influence the fluorescent signal. Future studies can therefore examine the mechanisms of Heinz-body formation and the relationship between fluorescence and G6PD deficiency in larger clinical samples. While the author has laid this excellently in theory, It is clear that there are signs of best designs for the analysis on a tangible level.

The article provides a high thought-out method of Heinz body analysis. By means of a flow cytometer, levels of both soluble and precipitated samples have, at the same time, been assessed. The test used two separate blood samples, and blood samples were examined using the flow cytometer. Records for both cell fluorescence were gathered and analysed. The entire cell fluorescence and the scattering of light were also gathered.

In order to evaluate the method used, the blood cells in both samples were separated using soluble fractions, and the gel was analysed electrophoresis. A clear relation between the soluble target and the fluorescence was analysed and shown. Interestingly, the authors showed the cell distribution concerning forward scatter relates to the volume of inclusion bodies that are formed. The author indicates that the newly developed methods are often used in evaluating two distinct purification tags and their impact on the expression patterns.

The data collection methods used in this article were clearly elaborated. Moreover, the author has provided a clear explanation of the instruments as well as the reliability of coefficients of all the possible tests that were conducted. The sample test used by the author was enough. However, they haven't provided any statistical technique.

To summarise, the article demonstrates novel qualitative and thought out methods of analyzing Heinz bodies. The efficiency of the test is directly related to the levels of antibodies. However, it is clear that the mechanisms used might provide different results. For instance, opsonophagocytosis is usually measured in order to analyze the response of functional antibodies. The article shows that antibody-mediated agglutination has a significant contribution to protection, which may explain the herd strength in Heinz bodies. However, more comprehensive research is needed in order to confirm the causal relationship in humans. (Bain, 2015) The method presented by the author allows high throughput screening of blood samples in order to determine the levels of Heinz bodies. The method described by the author is very effective in studying the contribution of antibody-mediated agglutination to protect blood cells. Moreover, it might also be used in evaluating novel cytometry.

The findings of the paper are very well organized and reported in a very objective manner. Moreover,

the data has also been organized in a chronological manner. This is because the difficulty of the statistical test used would be understood by an average reader.

The experiment described in the article might provide some key information regarding the association of certain modified genes with the development of Heinz bodies. However, the entire article is highly comprehensive, which presents one of the major strengths. The plan to study the Heinz cells is very clear, with an explanation of how the information would be developed further for a better understanding of the Heinz bodies. There is a clear indication, rationale, and justification of how Heinz bodies might be identified and prioritized for further understanding. The authors point out that the current experiment discloses that for the first time, Heinz bodies emit different fluorescences and that the fluorescence can be identified using flow cytometry.

The observations provided by the author agree with the findings. The success of the key observations is contingent on the unknown importance of fluorescence identified in the article, which is a major strength. Innovation is high since the correlation between modifications of various tests is still unknown. The final productivity of the test is moderate, with a set of moderate impact research in the past years. However, the experiment is probably going to have a huge impact on science since there are no real plans for logical analysis of any new research identified in this study.

The main advantage of this article is that the control agent differentiation is a fundamental aspect of the overall immunity of red blood cells. Heinz bodies are of huge importance in the development of fluorescence, including the regulation of terminal differentiation. With acetylphenylhydrazine might regulate final transcription. However, the article still has its disadvantages. The findings presented, and the description of their importance in the application shows a lack of clear understanding of the Heinz bodies. Moreover, the author fails to provide simplified figures to show the flow cytometry of both tests. Even though the available figures and data are adequately described, there is a need for further detailed texts, especially the stage at which the Heinz bodies developed Florence. Moreover, the author tends to reduce the expression of the Heinz bodies. Therefore, it is important for the investigator to demonstrate that further research is needed on Heinz body differentiation.

The conclusion was formulated with the knowledge that subjects for the study used acetylphenylhydrazine extensively during the experiment. The authors' final score was independent of the method used for testing. However, it appears as if the test was not a determinant of the final outcome. Since the time needed was consistent in both replications, the method used for testing seems to influence the time needed for the completion of the tests.

There are several clear things that have been discussed in the article that the author provides as a conclusion that Heinz bodies induced by acetylphenylhydrazine show fluorescence and adds that advanced methods need to be used in future studies. By making this statement, the authors have done enough to assess the conclusion with both the positive and negative factors experienced in the entire experiment, thus rendering a justifiable conclusion. Currently, getting the best outcome is not necessarily the outcome of the future. So, there is a need for further analysis of the Heinz bodies

using advanced methods.

One major factor that has not been addressed in the paper is the overall impact of understanding the key mechanisms of Heinz bodies, which has implications for the development of novel molecular therapeutics, which is likely high. It cannot be denied that this is one key reason why many studies on this topic would want to advance their methods in order to increase the quality of their research.

Therefore, it is my view that the authors have provided well-thought-out ideas throughout the entire article in a detailed manner on the subject of “novel flow cytometry-based method of analyzing Heinz bodies” However, for a comprehensive and complete analysis to be conducted, they would require to stop focusing on a single system as an isolated one and start considering the things in a bigger perspective because they are very important.

Design

This is the first major strength of the paper, as the methods have been clearly described. Therefore, it is possible to understand the design of the study clearly. Moreover, it would be possible for another group to use the same methodology to conduct the study. However, the authors should have included more data that was extracted from each test, and it is also necessary to indicate the specific individual who conducted the test. If the tests were conducted by more than one person, then it is important to elaborate on how they calibrated them. This should include the pilot before it was used and whether all the records were complete enough to evaluate the presence or absence of fluorescence, among other important features that should have been clearly explained.

Findings

The titles of the table and graphical presentations are complete. However, another title for the overall analysis should have been incorporated into the graphical presentations. Even though the authors provided statistical testing in the “Material and Methods section,” there is no indication of which specific statistical test was utilized in testing the overall results. Therefore, it is important to provide a simplified chart for the tests. This would help simplify and specify the presentations that refer to all the tests whose data was assessed. (Bain et al., 2017)

Another important aspect that is missing in the paper is the discussion critique. This section is necessary, but first, the authors should clearly explain the methodology used. They should critique it, discussing some of the key points and weak ones. In such a case, one common advantage when analyzing the cells is that they are complete.

At the end of the article, the authors provided several recommendations for future studies. The topic of the article is very important, and the results are very useful. Therefore, it is fortunate that the design of the retrospective study was moderate. However, the lack of a detailed literature review has

led to a huge deficit in the overall article. Therefore, it is important for the author to conduct a comprehensive literature review and provide a review paper on the topic, in which they can present the necessary protocols that they have developed. Moreover, the authors should make it clear and not incorporate any details of the study in this review. It can also be suggested that, unless the authors address the negative aspects of their current study, they need not have to report it again in a peer-reviewed journal. My overall opinion of the authors is that for all the reasons discussed above, the paper is still acceptable for future studies.

Overall, the paper appears to conform to the journal article publishing guidelines. It seems like the authors went through the publishing guidelines for authors. This includes all the names of the corresponding authors, which are given at the top of the page. However, they do not provide the abstract as listed in the guidelines. The findings and the discussions are presented in separate sections of the article. In addition, the guidelines also suggest that journal articles must be written in the third person because they report events that have already occurred.

In terms of being up-to-date, the supporting literature from other authors seems valid. This implies that the article has well organized bibliographical references which were published below 1970. Most of the studies used were published very recently. Moreover, as can be seen from the discussion, the literature appears to be directly related to the development of this study.

The internal validity of the article seems to be very positive. In fact, the author places more focus on ensuring this, and they clearly outline their efforts to develop an explicit observation tool, especially concerning the use of high and low inference observations. Moreover, they pointed out that they all understood how to use the observation tools, and the integrator was very high. This positive aspect of this kind of evaluation seems to be the fact that, the subjects are not used to complete the study, instead samples are taken from them and analysed by a third party. The advantage here is that the observers are not necessarily the authors.

Conclusion

The author concludes that Heinz bodies induced by acetylphenylhydrazine often emit fluorescence, and the fluorescence might be analysed using flow cytometry. Moreover, the author suggests the potential use of advanced methods in, the investigation of clinical samples. Overall, the article is very straightforward. From the beginning, it makes it clear where the article is headed. In order to have a huge number of people studying the article, a more simplified version is required. Once the reader understands the main objective of the paper, a good portion of the paper will be easily understood. However, the paper is good and well-written, with an important analysis and organization. When the entire piece is taken into consideration, it is important and very convincing from a theoretical perspective since it lays out a concrete framework for approaching this issue.

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