THE STABILITY OF BETALAINS EXTRACT FROM *Celosia cristata* FLOWER

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TABLE OF CONTENTS

ABSTRACT

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Natural dyes are colorants obtained from biological matter through mechanical retention, covalent chemical bond formation or complexes with salt and others. The advantages of using natural dyes are environmental friendly, the cost to use it is much lower, and can be prepared using simple extraction method. Although it has many advantages, natural dyes have low stability. The stability of the dye can be increased by optimizing the extraction temperature, extraction time, pH and the sunlight exposure level. This study was conducted to determine the stability of betalains extract from *Celosia cristata* (cockscomb flower) and to identify the optimal conditions for pH, extraction temperature, extraction time, and the presence of light for extracting the dye. Ethanol was used to extract the dye from Celosia Cristata flower based on the parameters. The optimal condition to obtain the highest concentration of betalain dye was by heating at 40 °C for 24 hours in acidic condition at pH 5. The result showed that concentration of betalain dye was decreased as the reaction times to exposure the dye to light was increased. Thus, the sample that was not exposed to light has a higher stability compared to the sample that was exposed to the light. As a conclusion, *Celosia cristata* flower can be used as a new potential natural dye in the dye sensitized solar cell application.