



Chemical Analysis of Okra Bast Fiber (*Abelmoschus esculentus*) and Its Physico-chemical Properties

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ABSTRACT

The chemical composition of okra bast fiber (OBF) has been isolated and isolated values are 67.5 % α -cellulose, 15.4 % hemicellulose, 7.1 % lignin, 3.4 % pectic matter, 3.9 % fatty and waxy matter and 2.7 % aqueous extract. So, the main constituents of OBF are α -cellulose, hemicellulose and lignin. The bleached OBF were dyed with Direct Green 27 and Acid Orange 52. The color fastness of OBF on exposure to sunlight have also been studied. It is seen that color fastness of raw fiber is higher than bleached fiber. The degradation of OBF with the action of sunlight was studied by tensile strength. Bleached fiber shown lesser tensile strength loss than raw fiber. Infrared spectra (IR) of OBF were measured for different exposure time under sunlight. The OBF contains higher α -cellulose and has good characteristics like high molecular weight thus it gives high tensile strength, more dye ability and better color fastness properties.

Keywords: OBF; Chemical composition; Oxidative degradation; Viscosity average molecular weight; Tensile strength; Infrared spectroscopy; Colorfastness.

INTRODUCTION

In earlier days, natural fiber served a crucial role to mitigate the everyday needs in a wide range of uses. But in recent years, the rival synthetic products are dominating over the uses of natural fiber. Due to the low cost, high service and expected qualities of the synthetic products, the defects of natural fiber have become prominent [1-2]. But the synthetics are not biodegradable, they are causing serious pollution problems. Thus for the proper utilization of these biodegradable natural fibers, scientists are now trying to find out the ways of alternative uses. As for example fiber glass, insulating material are

used in the replacement of plastics. Jute, a major source of natural fiber has some drawback such as low tensile strength, poor color fastness and high production cost [3-5]. On the other hand, OBF possess better characteristics as compared with other natural fiber specially jute fiber and it can be obtained from the discard stem of okra plant and it grows all over Bangladesh.

In the present investigation effort has been exerted to isolate the constituents of okra bast fiber and also to study the physico-chemical properties of the fiber.