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# Silica extraction and chemical analysis of rice husk in Sri Lanka

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Rice husk is an abundant agricultural waste in Sri Lanka. However, waste rice husk are being utilized as a source for raw material to manufacture value-added products and materials such as construction materials, filters, tableware, cardboards, etc in many other countries. As the first step toward initializing the development of rice husk-based products in Sri Lanka, this preliminary study was carried out to characterize the chemical constituents of local rice husk and to extract silica. Rice husk samples were obtained from Kurunegala, Galle, Hambanthota districts and they belonged to a few different rice varieties. Previously reported analytical procedures from the literature were employed to obtain the chemical compositions of each sample. Average value obtained for moisture, total cellulose, lignin, and silica contents were 10.80%, 48.12%, 22.30% and 15.20%, respectively. Results agreed with the literature values, however, certain statistical variations in moisture, cellulose, and silica contents between the rice varieties were observed. White color silica powder was extracted from pyrolyzed (at 600 $^0$C) rice husk after solubilizing it in an alkaline solution and precipitating in an acidic medium. FTIR analysis confirmed the high purity in silica obtained without any organic impurities. Therefore, the silica obtained from local rice husk can be utilized to develop commercially viable silica-based products.

**Keywords:** Rice husk, Lignin, Cellulose, Silica, Silica extraction

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