

## Preliminary Assessment of Non-Enzymatic Browning and Antioxidant Activity in Sea Cucumber Derived Gelatin-Sugar Models

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### ABSTRACT

There is a need to improve the sustainability of concrete by incorporating waste by-products and at the same time controlling the use of precious river sand as well as invaluable land from becoming waste disposal area. Coal bottom ash (CBA) is one such by products that can be used as river sand substitute in concrete. The present study investigates the effects of CBA on fresh, mechanical, and durability properties of concrete as reported in literature. The chemical and physical properties of CBA are diverse from various sources and years of investigation as it is influenced by the coal combustion system. Being rich in silica, CBA has pozzolanic characteristic. Many experimental works revealed that CBA can be used in appropriate proportion to enjoy the benefits of workability, enhanced concrete strength and durability. Almost all the researchers promote the idea of turning variety of wastes to wealth to save valuable green area for better use rather than dumpsite and reduce high dependency on river sand mining supply to ensure the sustainability of green river environment for prosperity of all the nations.

**KEYWORDS:** Non-enzymatic browning, Maillard reaction, glycation, gelatin, sugar

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