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**Abstract**

**Usage of agricultural waste and their modified form as bioadsorbent for removal of heavy metals from water**

With the advancement in technology and industrialization waste quantity has increased and composition has become lethal. One of the prime examples is presence of heavy metals in water. They are released from mining, electroplating, refineries, tanneries, fertilizer, paper, battery, dyes and pesticides manufacturing. Heavy metals are chromium, cadmium, nickel, mercury, iron, arsenic, vanadium, cobalt, lead, zinc and selenium. Their removal is necessary for the protection of human health and maintaining quality of water. Conventionally they are removed by chemical precipitation, ion exchange, oxidation, reduction, reverse osmosis, electrodialysis and ultrafiltration. But they are least preferred because of low efficiency, high cost, sensitive operation conditions and generation of large amount of sludge. Recent removal technique is adsorption. Mostly activated carbon is used for it. But attention has been diverted from activated carbon usage because of high expense. Bioadsorbents and agricultural waste to be used as bioadsorbent is a new field. They are being used because of low cost, easy availability, waste reuse, easy regeneration, easy renewability and high affinity for heavy metals.

Different agricultural wastes like egg shells, rice husk, wheat bran, orange peels, fruit and vegetables waste, coffee and tea residue, sugarcane bagasse, olive stones, apple pomace, tree bark, saw dust, coconut coir and even guava seeds are used as bioadsorbent for heavy metals removal. Agricultural waste is modified as well to enhance its efficiency. Rice husk and its different modified forms are used for removal of heavy metals. Rice husk is treated with acids, bases, different chemicals and even pulverized to enhance efficiency for the removal of heavy metals. Different modified forms of rice husks will be assessed to know which is the most efficient and economic one. This will help not only in removal of heavy metals but also solid agricultural waste will be reduced and reused for an effective purpose. Along with this the economic adsorbent will help industries financially as well.