

## **Microbiology as a viable fix for drinking water taste and odour issue; degradation of Geosmin using novel bacteria**

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Presence of adverse taste and odour (T&O) in treated drinking water is one of the major issues in global drinking water suppliers. Geosmin (*trans-1, 10-dimethyl-trans-9-decalol*) is responsible for earthy taste and odour in drinking water. Despite of no recorded health hazards, Geosmin becomes a major reason for customer rejection of drinking water. Therefore, removing Geosmin from drinking water is a necessity. Biodegradation of Geosmin using native bacteria has been proved compelling. Hence, the current study was designed to determine biodegradation capability of Geosmin using native bacteria. Isolation of Geosmin degrading bacteria in water and in sediment were carried out using standard enrichment study and potential degraders were screened using the Biolog MT2 plate assay. The selected Geosmin degraders were subjected to degradation kinetics study and molecular identification was carried out using 16S rRNA gene sequencing using V3-V4 variable region analysis. *Bacillus cereus* (MK968363), *Bacillus subtilis* (MK982381), *Acinetobacter guillouisae* (MK968347), *Acinetobacter indicus* (MK972672), *Pseudomonas stutzeri* (MK968348), *Myroides xuanwuensis* (MK606113), *Proteus mirabilis* (MK601699), *Providencia vermicola* (MK601700), *Providencia rettgeri* (MK968362) and *Myroides odoratitimus* (MK601701) were identified as degrading Geosmin within 7 days whereas *B. cereus* completely degraded Geosmin within 24 hours. Both *B. subtilis* and *A. guillouisae* completely degraded Geosmin at 2 days. Moreover, both *P. mirabilis* and *A. indicus* completely degraded Geosmin at 5 days. The results revealed that degradation mechanism belonged to both pseudo first order and pseudo zeroth orders.

**Keywords:** Biodegradation, Geosmin, order, native and green

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