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Assessment of Rhizoremediation potentials of *Arachis hypogeae* Root and stem on Crude oil Contaminated Soil in Abakaliki

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The hazardous effect of crude oil spillage cannot be easily forgotten by the communities, whose major sources of drinking waters are polluted. In this work, contaminated soil was remediated by cultivation of *Arachis hypogeae*. The study revealed the rhizoremediation abilities of *Arachis hypogeae* on the crude polluted oil soil, in which the growth rate against time in weeks was significant at SD = 2.8 ± 0.7, p<0.5. The under listed groups of bacteria were isolated and identified by DNA sequence, among which was *Rhizobium trifolii* reported to have ability to fix nitrogen and 64% G+C composition, with four observable mutations at 641, 666, 680 and 693 positions. *Prochlorococcus marinus* seen in the root of Arachis hypogaea, planted on crude oil polluted soil and had about 61% G+C composition, five different mutations at various points of 614, 648, 667, 694 and 695. *Rhodopseudomonas* , had about 62% G+C composition, with seven different mutations at various points which include: 561, 572, 630, 641, 667, 680 and 693 while Bacillus pumilus with about 45% of the DNA base pairs are G+C. Blast results obtained revealed 93, 72-85, 78-100, 82, 82-92, 72-87, and 86% sequence identities of *Rhizobium Trifolii, Rhodopseudomonas, Prochlorococcus marinus, Alcaligenes aquatillis, Escherichia coli, and Bacillius pumilus,* respectively. Sequenced prokaryotic organisms obtained from DNA sequencing reactions of 16SR marker were resolved into groups contains AMV-4_16SF_2016-04-18_DO1, and AMV-1_16SR_2016-04-18_AO5 and clustering with known prokaryotic organisms such as *Rhizobium leguminosarum, Azotobacter chroococcum, Enterobacteraceae* (plasmid R46), HQ 112195_Rmaldis, *Azotobacter vinelandii , Rhizobium pisi and Azotobacter armenlacus*. Organic compounds found in the root of Arachis hypogaea planted on crude oil polluted soil include trimethyl-3-4 hexanedione, 2- ethyl-3-methyl-1-pentene, dimethyl-1,3,5-cycloheptatriene, 2,3-Dimethylpentane, (Z)-3-Tridecene, (Z)-2-Tridecene, n-Tetradec-1-ene, Hexadecanoic acid and n-Nonane which were mainly crude oil derivatives absorbed into the roots of A. hypogaea planted on crude oil polluted soil, while those organic compounds detected from the stem of Arachis hypogaea planted on polluted soil include p-Dimethylbenzene, 2,4-dimethylpentane, dipropylmethane, neohaxane , 4-methylhexanol, (Z)-2-tridecene, (Z)-4- tetradecene and Pentafluoropropionic acid. Others are n-Tetracosanol, Dimethylfulvene and hexadecanoic acid. The rhizoremediation abilities of *Arachis hypogeae* on the polluted soil may have served as a *bulky* agent with an enhanced water and minerals uptake.

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