

Antibiotics against Bacteria Isolated from Body Surfaces of Cockroaches

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DESCRIPTION

Cockroaches are commonly found in areas associated with man such as restaurants, kitchens, bakeries and grocery stores. This insect live in different environments, like sewage pipes, latrines, garbage, wall slits, baseboards and filthy places as they are attracted to food, organic waste and fluids regularly discharged in such sites. There are many species of cockroaches, but two of these species are commonly found infesting in domestic area, these are the German cockroach (*Blattella germanica*), and the American cockroach (*Periplaneta americana*). The German cockroach is more prevalent inside the home while the American cockroaches are common around the home and associated with water drainage systems and water. American cockroaches are often found in intimate association with human beings and are present in large numbers in and around houses or hospitals and in urban areas and villages with poor sanitation and insalubrious conditions.

Cockroaches are insects that are commonly found in filthy places associated with man such as sewage pipes, latrines, garbage etc. A total of eight (8) bacteria isolates were identified in the following order of percentage frequency of occurrences which are: *Proteus vulgaris* (30%), *Citrobacter freundii* (5%), *Streptococcus faecalis* (5%), *Staphylococcus aureus* (10%), *Klebsiella pneumoniae* (15%), *Proteus mirabilis* (10%), *Escherichia coli* (20%), and *Pseudomonas aeruginosa* (5%). These isolates were subjected to antibiotics activity. The antibiotics used were Cefuroxime (30 µg), Gentamycin (10 µg), Ciprofloxacin (5 µg), Ofloxacin (5 µg), Nitrofurantoin (300 µg), Ampicillin (10 µg), Ceftazidime (30 µg) and Augmentin (30 µg). *Citrobacter freundii* was more sensitive to Ceftazidime with a zone of inhibition of 26 mm. No antibiotic activity was recorded on Ampicillin when in contact with *Staphylococcus aureus* and *Streptococcus faecalis*. Also Augmentin and Nitrofurantoin had no activity on *Proteus mirabilis*. *Pseudomonas aeruginosa* and *Proteus mirabilis* were a little sensitive to Ceftazidime and Gentamycin respectively. The sensitivity and resistance exhibited by these bacteria might be due to the environmental factors/development of the resistance genes by the bacteria.

Recently more than 40% of cockroach populations are found in domestic areas, because of uncontrolled of domestic sewage, poor sanitation and environment pollution which makes an ideal environment for the increase in cockroaches, population. Furthermore, their feeding mechanisms and filthy breeding habits make them the ideal agents for harbouring and transmitting pathogenic micro-organisms. Cockroaches such as (*Periplaneta americana* and *Blattella germanica*) have filthy habits with an ability to spoil food, transfer pathogens, and cause allergic reactions and psychological distress. Various bacteria may simply be carried on the insect cuticle or be ingested and sometime later, regurgitated or excreted. Moreover, several species of bacteria of public health significance have been isolated from or have passed through, cockroaches (*Periplaneta americana*) and their digestive tract, such as *Staphylococcus aureus*, *Streptococcus spp.* and *Pseudomonas aeruginosa*, etc. Cockroaches collected in hospitals and households have been found to harbor multi-drug resistant *Klebsiella spp.* So, the cockroaches play a role in the epidemiology of nosocomial infections. In addition, a neonatal unit infested with cockroaches suffered an outbreak of nosocomial disease due to extended spectrum β-lactamase producing *Klebsiella pneumoniae*.

CONCLUSION

The body surfaces of cockroaches are reservoirs of bacteria that cause diseases in human and the bacteria isolated in order of their percentage of occurrence are *Proteus vulgaris* (30%), *Escherichia coli* (20%), *Klebsiella pneumoniae* (15%), *Staphylococcus aureus* (10%), *Proteus mirabilis* (10%), *Pseudomonas aeruginosa* (5%), *Citrobacter freundii* (5%), and *Streptococcus faecalis* (5%). *Citrobacter freundii* is more sensitive to all the antibiotics used. *Staphylococcus aureus* and *Streptococcus faecalis* showed resistance to Ampicillin while *Proteus mirabilis* showed resistance to Augmentin and Nitrofurantoin.

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Received: January 05, 2022, Manuscript No. AMOA-22-45776; **Editor assigned:** January 07, 2022, PreQC No. AMOA-22-45776(PQ); **Reviewed:** January 21, 2022, QC No. AMOA-22-45776; **Revised:** January 24, 2022, Manuscript No. AMOA-22-45776(R); **Published:** January 31, 2022, DOI:10.35248/2471-9315.22.8.214

Citation: Usman AA (2022) Antibiotics against Bacteria Isolated from Body Surfaces of Cockroaches. J Appl Microbiol Open Access. 8: 214.

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