



Utilize powder of earthworm to inhibition three species of bacteria

Nebrass F. Chachain* and Evan H. Sulaiman

College of Science, University of Al-Mustansirya, Iraq.

*Corresponding author: gmoon444@gmail.com

Abstract

This study aimed to use powder of earthworm inhibition three types of bacteria (*Klebsiella pneumonia*, *Escherchia coli* *Pseudomonas aeruginosa*) Prepared (250mg/ml, 300mg/ml, 400mg/ml and 500mg/ml) and distilled water (control), record less inhibition zone to *K. pneumonia* (11.51mm) in concentration 250mg/ml and to *E. coli* 12.50mm while to *P. aeruginosa* record 13.47mm and the best concentration was 500 mg/ml it was inhibition zone of *E. coli* 17.42mm while inhibition zone to *K. pneumonia* was 15.45mm and inhibition zone for *P. aeruginosa*. The result indicate when increase in concentrations of powder increase inhibition zone of bacteria .

Keywords: Powder of earthworms, *Klebsiella*, *Escherchia*, *Pseudomonas*.

Introduction

Earthworms play a good role in proper functioning of soil ecosystem, increase the soil fertility so they referred a farmers friend and they considered source of protein (Mathur *et al.*, 2010). Powder of earthworm is one extracts that used to food for fish because high percentage of protein (Zakaria *et al.*, 2012), Powder of *Lampiom auritii* important to human health because have a large amounts of zinc (32.34ppm), soluble nitrogen (1.8%), iron (241.1ppm), manganese (17.2 ppm), protein (31.7%) and copper (4.50 ppm) together with quantities of calcium, magnesium, carbohydrate and potassium (Lourdumary and Uma, 2012; Paoletti *et al.*, 2011). Powder earthworms extracted lumbrokinase used to struck and cardio vascular disease through give orally. In medicine importance since long time ago Rheumatism, Bladder stone and impotency. It used to treat thrombotic therapy, It beneficial support for liver and other organ systems. In China, Korea, Vietnam and most of Southeast Asia, earthworm and most has been utilize to therapeutic benefits for thousands of years. The bacteriolytic substances include which have serine proteases and promote clots, Lysine, lumbricin, eiseniapore, coelomiccytolytic factor and Erythrocytolytic proteins have been tested for anti-neoplastic potential. Anitha and Jayraaj (2012) and Oliver (1978) Used dried powder earthworms *Perionyx excavates* in tested against fungi (*candida albicans*, *Aspergillus flavus* and *Aspergillus niger*) and against bacteria (*Pseudomonas aeruginosa*,

Staphylococcus aureus and *Escherichia coli*) and used petri dish included of fungi and Bacteria colonies on Muller Hinton agar media. Earthworm powder had greater antifungal activity on *Aspergillus flavus*, *candida albicans*. Ethyl acetate at concentration 1:5 was more effective against Gram negative aerobic bacteria *Pseudomonas aeruginosa*, an aerobic bacterium *Escherchia coli* and proved more effective on *Staphylococcus aueus*.

Materials and Methods

Collected the samples and preparing powder of earthworm : Earthworms were collected from different region of Diyala two orchard and house garden the first orchard located in center Khanqin north of Diyala the second orchard located in north Khanqin north of Diyala. Big and house garden located in Saif Saad / Ghalbia in south of Diyala digging the soil and isolated small worms by sieve (screen) pores (slots) 0.1 mm² and large worms collected by tongs than put the amount of soil and taken from place to combine in glass bottle then take worms to the laboratory washed them in tap water to remove dirt from the body surface. The earthworms were soaked in distilled water for 6-8 hours to allow the soil in its tract to be excreted, later earthworms were washed with distilled water and collected in petri dish that kept in an-incubator for 24hrs at 55°C after that removed and pounded to make it into powder, stored in refrigerator of normal temperature (-6 °C) (Yegnanarayan *et al.*, 1987; Andleeb *et al.*, 2016). Well diffusion assay method: Diffusion method

used in the drilling to observed the effect powder earthworm on the growth Bacteria *K. pneumonia*, *P. aeruginosa* and *E. coli*. Vaccinate as the center of nutrient (Nutrient agar) by sterile swab from Bacterial stuck working digging by pastor pipette, then transferred concentrations Preperated (250 mg/ml, 300mg/ml, 400mg/ml and 500mg/ml) of extracts to drilling and size (50 microlitter) in each of drilling and found one drilling containing distilled water (Control). Then a cubating petri Temperature 37°C during 24hrs, and determined activity of extracts measured diameter inhibition zone around the each drilling by milliliter (Stockes *et al.*, 1986).

Statistical analysis: Least significant difference – LSD test was used to significant compare between means in this study.

Results and Discussion

Table (1) and Figure (1) Showed the effect of earthworm powder concentration on three type of Bacteria show highly significant ($P<0.01$) of earthworm powder in all concentrations in concentration 250mg/ml inhibition zone of *E. coli* was 12.50mm compared with *K. pneumonia* was 11.51mm while to *P. aeruginosa* was 13.47mm, in concentration 300mg/ml inhibition zone to *E. coli* was 15.46mm while to *K. pneumonia* was 12.90mm and to *P. aeruginosa* was 13.73mm, while in concentration 400mg/ml inhibition zone of *E. coli* was 16.51mm, to *K. pneumonia* 13.5mm and to *P. aeruginosa* 15.79mm and in the last concentration (500mg/ml) inhibition zone to *E. coli* 17.42mm and to *K. pneumonia* was 17.12mm finally in *P. aeruginosa* inhibition zone was 17.12mm.

Table (1): Effect of earthworm powder on inhibition of some bacteria sp.

Concentration (mg/ml)	Bacteria			LSD value
	<i>Escherchia coli</i> (mm)	<i>Klebsiella Pneumonia</i> (mm)	<i>Pseudomonas aeruginosa</i> (mm)	
250	12.50 ± 0.25	11.51 ± 0.29	13.47 ± 0.08	0.787 **
300	15.46 ± 0.23	12.90 ± 0.49	13.73 ± 0.11	1.115 **
400	16.51 ± 0.25	13.57 ± 0.29	15.79 ± 0.13	0.827 **
500	17.42 ± 0.31	15.45 ± 0.29	17.12 ± 0.13	0.887 **
LSD value	0.861 **	1.156 **	0.377 *	----

** (P<0.01).

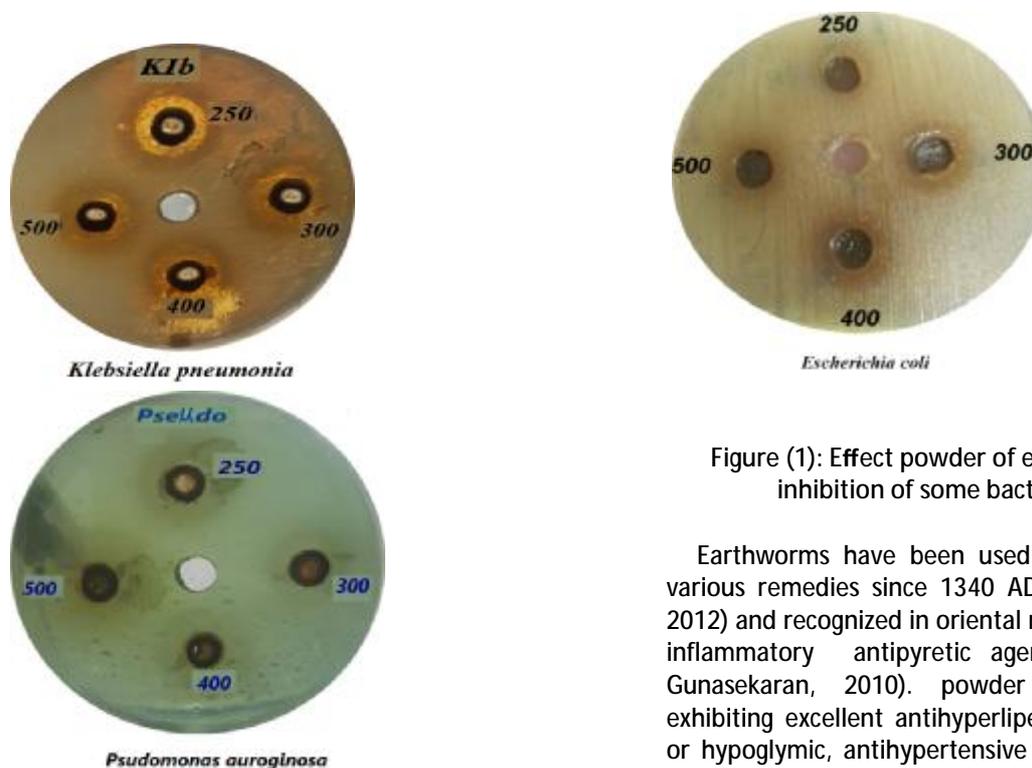


Figure (1): Effect powder of earthworm on inhibition of some bacteria sp.

Earthworms have been used in Medicine for various remedies since 1340 AD (Hossam *et al.*, 2012) and recognized in oriental medicine as anti – inflammatory antipyretic agent (Prakash and Gunasekaran, 2010). powder of earthworm exhibiting excellent antihyperlipemic, antidiabetic or hypoglymic, antihypertensive without produce any side effects. Powder of earthworm inhibition

all Bacteria that used in that experiment when increase concentration of powder increase inhibition zone of Bacteria because it is comprised of certain lytic compounds (Prakash *et al.*, 2008) are assumed to be antibiotic peptides that inhibit growth of microorganisms through pathway different from conventional antibiotics (Lang *et al.*, 1997), that conforms with Punu *et al.*, 2016 show powder of *Perionyx excavates* have anti-bacterial properties against *Pseudomonas aeruginosa*, *E. coli* and *Staphylococcus aureus* and powder of *Lampito mauritii* tested for antibacterial and antifungal activities, Ethanolic extract of earthworm powder possessed maximum antibacterial activity in comparison with Petroleum ether and aqueous extract against *Aeromonas hydrophila*, *S. aureus* and *Salmonella typhi* (Bhorgin and Uma, 2014) and other suggested earthworms powder utilized anti-microbial cause of earthworms powder contain lytic compounded like flavonoid and phenol, lytic compounded are supposed anti-biotic peptides that inhibited bacterial growth and compared with drug Tetracycline *Klebsiella pneumonia* (4.4±0.02 & Tetracycline 9.0), *E. coli* (1.9±0.02 and Tetracycline 9.0) and *Pseudomonas aeruginosa* (3.4±0.10 and Tetracycline 8.5) (Anitha and Jayraaj, 2013) and this the show effect Sphingomyelin more than lytic compounded. Remember (Shobha and Kale, 2008) the gut of earthworm have antibacterial and antifungal activity. Cho *et al.* (1998) showed Lumbricin I is consider as a proline-rich antimicrobial peptide containing 62 amino acids including proline with a molecular weight of 7231 Da antimicrobial activity *In vitro* against a broad spectrum a microorganisms.

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