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AN ASSESSMENT ABOUT THE HIVE GLUE BACTERIAL ACTIONS AGAINST TWENTY-FIVE VARIOUS DISEASE BACTERIA

Dr. Assam Arshid, Dr. Quratul Ain, Dr. Saleha Maqsood
DHQ Hospital Sheikhupura

Abstract:
Objective: *The main purpose of this study was to interrogate the bactericidal actions of hive glue in the models gathered from multiple locations. The research was carried out against twenty-five different disease dangers of bacteria.*
Methodology: *This research was held in the laboratory setting of Allied Hospital, Faisalabad (October, 2016 to November, 2017). The biological characteristics of the removed elements from hive or bee glue are checked by AD method better known as agar distribution method. Seven different concentrations of removed elements of methanol were arranged and included one by one to the bacteria layers of seed. The inhibition area of each concentration was calculated and gave us the information of ability of the removed elements to hinder the evolution of bacteria. The inhibition area was calculated in terms of diameter.*
Results: *N. brasiliensis & Nocardia asteroids have provided equal amount of vulnerability to the various amounts from the taken elements of hive glue and the complete inhibition area proved that the action was extraordinary. The inhibition areas provided by the taken elements of hive glue were checked for all types of bacteria.*
Conclusions: *The result of this study gave the conclusions that five percent concentration of the hive glue is similar in producing inhibition zone to the fifty milligrams per millilitre agar amicakan. The power of the hive glue was eighty percent of the amicakin power. So, it is too much powerful to kill the other microorganism like Norcadia.*
Keywords: *Hive Glue, Bactericidal, Inhibition, Amikacin, Concentration and Agar Distribution method.*

Corresponding author:
Dr. Assam Arshid,
DHQ Hospital,
Sheikhupura

QR code

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INTRODUCTION:

The most effective production of the hive produced by bees is bee glue better known as propolis. Propolis is brown coloured and a sticky substance. It is gathered by the honey bees from the buds of the leaves and bark cracks of different type of trees. The bee glue is blended with the wax produced by bees. Beeswax ß-glucosidase discharges from their body during the gathering process of hive glue [1]. It was used to prevent the growth of microorganisms in old times [2, 3] and it promotes the healing process of injuries [4, 5]. It is used to remove the infection of mouth [5] and acts as a fever reducer [6, 7]. Caffeic acid phenethyl esters abbreviated as CAPE and flavonoids are the most vigorous elements of the bee glue [2, 4, 8] and responsible for the natural activities of the bee glue [9 – 11]. The bactericidal characteristics of this element became the centre of attraction after the observations. The main idea of this research was to check the bactericidal actions of the taken elements of the hive glue. Fifty percent resin (it is made up of flavonoids) is the part of bee glue. Bee glue contains thirty percent wax. There is ten percent important oil in propolis. Five percent pollen and five percent different compounds are also the ingredients of hive glue [6]. The authentic trait of polyphenols is to provide hindrance to enzymes. It is also an important part of propolis [13]. Medical studies proved that bee glue has essential effects on different diseases [11, 14]. Bee glue composes high number of flavonoids. The flavonoids are used in preparation of healthy food and cosmetic substances due to their actions against the microorganisms [15, 16]. Now, the bee glue is available in all parts of the world and it is an important part of healthy food [14 – 17]. A gram-positive bacteria Nocardia, which is cause of many diseases has a dangerous effect. It has the power to initiate many diseases in human beings in no time [18 – 19]. The bee glue has a strong affect in the medical treatment of skin and breathing diseases, the bactericidal characteristics of the bee glue on the norcadia have been researched.

MATERIALS AND METHODS:

This research was held in the laboratory setting of Allied Hospital, Faisalabad (October, 2016 to November, 2017). Seven out of twenty-five strains Nocardia Brasiliense's, six strains Nocardia asteroids and two strains of each Escherichia coli, Pseudomonas aeruginosa, Klebsiella pneumonia, Enterobacter cloacae, Shigella flexneri and Staphylococcus aureus are the bacteria used. The cultures were placed at negative seventy centigrade in the BHI known as brain heart infusion broth which composed of twenty percent glycerol.

Dickinson Microbiology Systems provided the medium and plate discs: Sabouraud's Dextrose Agar (SDA), Mueller Hinton Agar, Glycerol Yeast Extract agar, BHI composed of twenty percent 20% glycerol, Blood Agar base (BA) and test disks containing; Neomycin, CAZ-30 (31633), Streptomycin (31328), (Co-trimoxazole) Sulfamethoxazole with Trimethoprim, Tetracycline (Te-30), Amikacin (AN30) (31597), Amoxicillin(AmC-30) (31629),

Ceftizoxime (ZOX-30) (31623), Cephalothin (CF-30) (31271), Chloramphenicol (C-30) (31274), Gentamicin (GM-10) (31299) Kanamycin (K-30) (31301). Different test discs were used to check the action against the microorganism as bacteria.

Rudimentary bee glue samples gathered by Apis were taken from the hives of bees. Two grams of the bee glue was liquefied in a suitable amount of ethanol. The filtration of the extract was carried out after the evaporation of the extract. The extract from the bee glue was used to arrange the suitable concentrations for further testing. Eighty percent methanol was used to prepare the 7 different concentrations of the methanol taken off elements of bee glue.

Two different types of tests were used to check the hindrance ability of bee glue against the bacteria especially Narcadia. The suitable quantity of every concentration such as 0.1, 0.2, 1, 2, 5, 8 and 10% of bee glue make a part to the MHA and GYEA discs. The same amounts of the bee glue were used for the qualitative method. Two same refined plates were kept warm at thirty-seven centigrade and forty-two centigrade. The same taken off elements amounts became active bacteria; Enterobacter cloacae, Pseudomonas aeruginosa, Escherichia coli, Klebsiella, Flexnerian and Staphylococcus. The refined plates were kept warm at a temperature of thirty-seven centigrade. A model of clear zones from antibiotic was used to check the inhibition area against the bacteria with the examination of the cultured plates.

RESULTS:

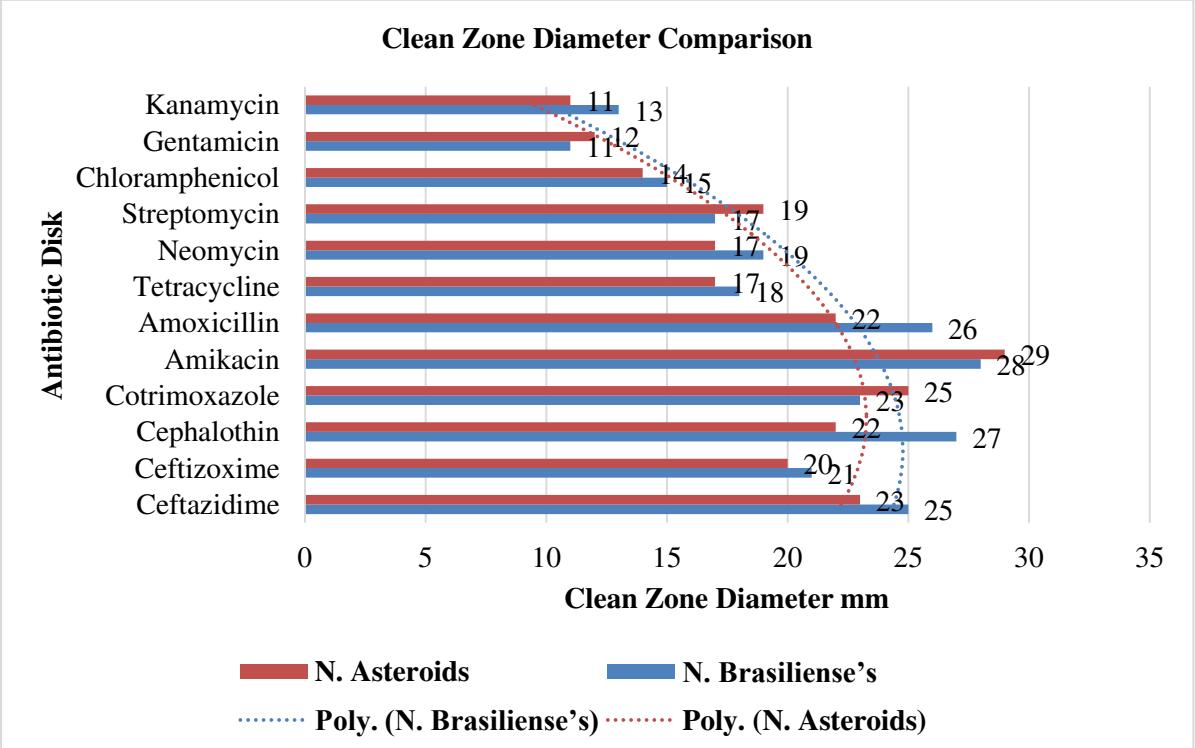
The outcome proves that there is same vulnerability shown by narcadia to the different amounts of the bee glue taken off elements. Figure no one shows the inhibition effects of the bee glue against narcadia using two different methods. The contrast of the bactericidal actions, clearly showed the prohibiting impact of the bee glue taken off elements against the damages of bacteria drop and disk plate methods as mentioned in Table – I. The bactericidal vulnerability test against damages of norcadia by using different mediums showed the vulnerability to model antimicrobial discs described by Table – I. The impact of the bactericidal activity of the bee glue in opposition to the damages of norcadia using disk plate procedure as described in figure no two and three.

Table – I: The inhibitory effects of propolis against selected pathogenic bacteria using drop and disk plate methods respectively

Propolis Bacteria Concentrations	Inhibitory zone diameter (mm) Drop Plate/Disk Plate				
	0.1 %	0.5%	1%	2%	5%
Nocardia asteroids	0/0	14/13	16/20	24/23	30/24
Nocardia Brasiliense's	12/12	17/16	23/20	27/22	35/23
Escherichia coli	14/24	15/24	16/23	17/17	19/19
Pseudomonas aeruginosa	12/24	14/20	16/19	18/18	18/18
Klebsiella pneumonia	10/20	11/17	14/15	16/16	18/18
Enterobacter cloacae	9/18	12/16	14/15	14/18	17/17
Shigella Flexnerian	10/21	12/21	17/19	18/18	18/18
Staphylococcus aureus	11/27	14/25	17/19	20/20	21/21

Table – II: The comparison of clean zone diameter of standard antibiotic disks against Nocardia strains

Antibiotic Disk	Media	Clean Zone Diameter mm	
		N. Brasiliense's	N. Asteroids
Ceftazidime	GYEA, BHIA, BA	25	23
Ceftizoxime	GYEA, BHIA, SDA	21	20
Cephalothin	GYEA, BA	27	22
Cotrimoxazole	MHA, SDA	23	25
Amikacin	GYEA, BHIA	28	29
Amoxicillin	GYEA, BHIA	26	22
Tetracycline	GYEA, BHIA, MHA	18	17
Neomycin	GYEA, BA, BHIA	19	17
Streptomycin	GYEA	17	19
Chloramphenicol	GYEA, BHIA	15	14
Gentamicin	GYEA, BA, BHIA	11	12
Kanamycin	BHIA	13	11



DISCUSSION:

The researches performed in different parts of the world (against pathogenic organisms) shows imminent action against microorganisms [20-25]. There is low quantity of interrogations is available for the damages done by Nocardia. It gives a unique value to this research. The record of the medicines provides valid data about the bee glue. This element obtained from the trees played a vital role in the treatment of wounds and tumours at the time of world war [26, 29]. Recent studies in the medical field prove that bee glue has many anti disease compositions in it [30, 31] and it also includes flavonoids [16]. The main bactericidal traits of the bee glue against gram positive bacteria is due to the high amount of the flavonoids elements and the availability of the caffeic acid [10, 11, 16, 20 – 21, 27]. These elements and polyphenols substances have strong bactericidal properties. Area vegetation, aged or fresh state of bee glue, geographical behaviour and seasons are the main factors describing the made-up elements of the bee glue which perform bactericidal activities [32, 33, 34].

One hundred and eighty kinds of polyphenols have been separated from bee glue [7]. Luteolin, quercetin, rutin, frolic acid, apigenin, caffeic acid and flavonoids are its main elements of composition in bee glue [16]. The made-up elements of bee glue can be different based upon the geographical area of its origination [1, 16, 20, 32 – 34]. In this research, a new kind of the bee glue was introduced in which was gathered from remote areas. Tables indicates the complete prohibition result of the bee glue against E. coli and S. aureus and for the other 4 types of the bacteria the effect was less than the two. This outcome confirms that the bee glue has bactericidal activities as mentioned by earlier studies [20 – 25]. The outcome shows that bee glue has very effective bactericidal activity but the testing in test tubes in the absence of oxygen will be carried out further. The composition elements of the bee glue have the traits of initiating inhibiting activities which are biological in nature [8 – 11].

CONCLUSIONS:

This research proves that five percent amount of the bee glue creates the equal effect as produced by fifty milligrams per millilitre agar amicakan in producing inhibition zones. The bee glue power is eighty percent to the power of amicakan against the most dangerous type of thread like bacteria norcadia.

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