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IMPORTANT OF USING MICROORGANISMS IN SOME MEDICAL APPLICATIONS, PRODUCE BIOFERTILIZERS AND WASTE WATER TREATMENT

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ABSTRACT

The main idea of this work consists of some point's collection one with other cannot separate. The first one how to use microorganisms in deferent types from our life's as useful products by correctly way? The second which type of microorganisms can use in safe and improve to healthy propose without any infection and dangerous problems? The third one how to make combination between the selection strains from microorganisms after screening and make map for wok to solve these challenges (food, health and water) in ecofriendly form . There for the steps of this wok look forward and aimed to find easy, economic and safety component which it use in short time to solve World's Problems and either combine and aggregate together in unique formula to discuss the role and impotents of microorganisms to humane and balances of nature between the theatrically and actual results felids from our life in scientific base and really role. Some microorganisms have ability to produce and secrete useful substances for human needs. Such as saccharomyces and lactobacillus. In the present study the use of microrganisms formulation were evaluated and divided to three terms.

1- The first one from the World's Problems .Health is important for all man kind and use the same of these Microorganisms as probiotic bacteria and improve the digestive system throw the regulation of digestion mechanism and act as antimicrobial agent against some pathogenic diseases and harmful microrganisms .

2- Use Microorganisms as biofertilizer with throw These include technology to use of micro-organisms beneficial to employ them in improving the physical and biological soil properties, field experiments conducted in minya area for winter season 2012 in silty loam soil texture classified under 3 groups , The experiments were aimed to study effect of Biofertilizer on actual results of agriculture corps and efficiency of usage to increase crop and some plant yield and attributes under Biofertilizer treatment without any addition of chemical fertilization , The experiment

was in randomized complete block design (RCBD), in three replicates, where traditional chemical fertilization (Urea Nitrate form) treatment (control treatment complete dose) , Biofertilizer in pure form without any chemical treatment and combination between chemical and natural fertilization half dose of each one for two types of fertilization at vegetative growth, tubers rise size and composition of the tubers stages randomly on experimental plots. Quantities of applied types of fertilization were calculated in each treatment based on: Effect of (Use Biofertilizer) on germination of wheat seeds and shoots elongation.

Effect of (Use Biofertilizer) on Fresh weight and Length of wheat shoots after 20 days cultivation under ambient conditions

Keywords: probiotic, Biofertilizers and biological wastewater treatment

The present study the classified to three main groups.

1. Probiotic Bacteria, Mechanisms of Action: Healthy food from microoranisms and its important to our life Probiotic organisms are thought to have four basic mechanisms of action.

I. Through fermentation, they secrete helpful compounds (such as those in the colon or liver), alter the colonic environment, or serve as signals to communicate with the immune system. These compounds may include vitamins, antioxidants, enzymes, bioactive peptides, organic acids, and polysaccharides [Bravo, 1998, Tieking, *et al*., 2003, Zvauya, *et al*., 1997, Seppo, *et al*., 2003, Calderon, *et al*., 2003, Mensah, *et al*., 1995, and Olsen, *et al*., 1995].

II. They inhibit the growth of organisms that are harmful to humans by either secreting antimicrobial substances, or by blocking the ability of the harmful organisms to adhere to or puncture the gut wall [Rolfe, 2002];

III. They prevent the build-up of waste materials and toxic compounds in the colon by either blocking their formation or by breaking toxins and waste materials down into harmless molecules that can be easily eliminated [Rolfe, 2002].

IV. They exhibit strong antioxidant activities, which include the ability to scavenge reactive oxygen species, chelate metal ions, such as iron and copper, inhibit the formation of the enzymes that create reactive oxygen species, and reduce oxidants [Lin, *et al.,* 1999].

2. Use Microorganisms as biofertilizer Soil fertilization:

Bioavailability nitrogen is the element in soil that is most often lacking. Phosphorus and potassium are also needed in substantial amounts. The side effects of use chemical fertilizers in agriculture can be summarized as disturbances in the soil reaction, development of nutrient imbalances in plants, increased susceptibility to pests and diseases. Inorganic fertilizers are generally less expensive and have higher concentrations of nutrients than organic fertilizers. Also, since nitrogen, phosphorus and potassium generally must be in the inorganic forms to be taken up by plants, inorganic fertilizers are generally immediately bioavailability to plants without modification.[1] However, some have criticized the use of inorganic fertilizers, claiming that the water-soluble nitrogen doesn't provide for the long-term needs of the plant and creates water pollution. Slow-release fertilizers may reduce leaching loss of nutrients and may make the nutrients that they provide available over a longer period of time. Those nutrients may then undergo further transformations which may be aided or enabled by soil micro-organisms. Like plants, many micro-organisms require or preferentially use inorganic forms of nitrogen, phosphorus or potassium and will compete with plants for these nutrients, tying up the nutrients in microbial biomass, a process often called immobilization. The balance between immobilization and mineralization processes depends on the balance and availability of major nutrients and organic carbon to soil microorganisms.[2][3] Natural processes such as lightning strikes may fix atmospheric nitrogen by converting it to (NO_2).

3. Waste water treatment by microorganisms :

A major problem facing municipalities throughout the world is the treatment, disposal and/or recycling of sewage sludge. Generally sludge from municipal waste consists mainly of biodegradable organic materials with a significant amount of inorganic matter (Elliot 1986).

However, sludge exhibits wide variations in the physical, chemical and biological properties (Colin *et al.* 1988; Bruce 1990). At the present time, there are a number of methods being used to dispose of sewage sludge from disposal to landfill to land application. Although there are many methods used, there are numerous concerns raised regarding the presence of constituents including heavy metals, pathogens and other toxic substances. This requires the selection of the correct disposal method focusing on efficient and environmentally safe disposal. New technologies are being produced to assist in the treatment and disposal of sewage sludge, conforming to strict environmental regulations.

The basis for using these species of microorganisms is that they contain various organic acids due to the presence of lactic acid bacteria, which secrete organic acids, enzymes, antioxidants, and metallic chelates (Higa & Chinen 1998). The creation of an antioxidant environment by EM assists in the enhancement of the solid-liquid separation, which is the foundation for cleaning water (Higa & Chinen 1998).

Materials and Methods:

Amount (g/L)

I. Molasses
II. Lactic acid Bactria
III. Yeast: Saccharomyces cerevisiae .
IV. Sodium chloride (Nacl).
V. Solvent Matter (Water)
VI. Glass rod or sterol.
VII. Lactobacillus delbruekii.
VIII. Lactobacillus fermentum.

Procedure:

1. Mix all content to make solution then incubate for 24 H. at room temperature after incubation period dilute the first solution with water (1: 9) concentration then incubate again for 24 h. at room temperature added this Collection to use with irrigation water for soil.
2. Assessment effect of this bio-fertilizer solution on seedling and plant growth.
   The first application and 1st experiment which compare the difference between the use of bio-fertilizer and chemical fertilizer and the effect of it on plant.

Experimentation:

The microbial consortium was formulated using molasses as medium and incubated at 37°C for 3 days. Field experiments using solution contain microorganisms

- The use of bio-fertilizer was show the increase in the length and width of the paper in the plant laboratory for bio-fertilizer compare to the control or chemical fertilization.

* When use biofertilization instead of or replacement the chemical fertilization by addition the amount of solution contain microorganisms to water of irrigation equal from start point to the end of earth or area which planted and want to increase fertility of soil and plant to produce safe and healthy food and crops .

1- Design and Experimental Technique:

Field experiments were carried out at the Experimental farm for different area of agriculture. Minia Governorate, Qena Governorate, Aswan Governorate and Fayoum Governorate summer seasons 2013 and 2014. to show ability of using microorganisms as biofertilizers and replacement to chemical fertilization on wheat crop (growth and yield).

The experiment was arranged as Randamize Complete Block design (RCB) design with four replications.

Each plot was 1/175 of (Acre)

The wheat seeds cultivar Sakha and BeniSuef 5 were used in these experiments at rate of 60 kg seeds/acre

The solution contain effective strains of (1) - Yeast: Saccharomyces cerevisiae in pure form obtained from Pharmacy Supermarket and shops not harmful to health because everyone used to buy from these places and

used since ancient times There were no problems or dangerous to use in many of the houses and their entry into the bread and some food manufacturing without restrictions or warnings.

Steps of using microorganisms and indications:

Lactobacillus corresponding to lactobacillus delbruekii and Lactobacillus fermentum. 10 billions in each time taken oral in human use

Properties:

Antidiarrheal of microbial origin, with:

Enterocytes shielding property against the approach of pathogenic microorganisms.*

Non –specific immunostimlation of the mucosa (increase synthesis of IgA)*

*Direct bactestatic action, and stimulation of the growth of the defensive acidogenic intestinal flora.

And also other components There were no problems or dangerous to use such as Molasses (Black Honey)

The concentration of molasses at rate of 150 gm / liter.

The following treatments were used in the two seasons:

a) Control full dose from nitrogen as chemical fertilization. And conventional farmers.
b) Combination between chemical fertilizer and biofertilizer as half of dose from nitrogen and 4 liters from solution which contain microorganisms and important substances useful to plant and soil.
c) 4 liters from The solution contain effective strains of (1) - Yeast: Saccharomyces cerevisiae in pure form obtained from Pharmacy Supermarket and shops not harmful to health because everyone used to buy from these places and used since ancient times There were no problems or dangerous to use in many of the houses and their entry into the bread and some food manufacturing without restrictions or warnings.

Steps of using microorganisms and indications:

Lactobacillus corresponding to lactobacillus delbruekii and Lactobacillus fermentum. 10 billions cells / gram of inoculation. + 150 grams of molasses + 150 grams of yogurt + 2 gram sodium chloride (Nacl).

4- 8 liters from The solution contain effective strains of (1) - Yeast: Saccharomyces cerevisiae in pure form obtained from Pharmacy Supermarket and shops not harmful to health because everyone used to buy from these places and used since ancient times There were no problems or dangerous to use in many of the houses and their entry into the bread and some food manufacturing without restrictions or warnings.

Steps of using microorganisms and indications:

Lactobacillus corresponding to lactobacillus delbruekii and Lactobacillus fermentum. 10 billions cells / gram of inoculation. + 150 grams of molasses + 150 grams of yogurt + 2 gram sodium chloride (Nacl).

When the comparison between chemical fertilizer and biofertilizer were performed

The full dose of nitrogen (60unit / acre) was added as urea at 3 times before the first, second and the third irrigation in equal amounts.

Assessment effect of solution as bio-fertilizer on seedling and plant growth.

Added this Collection in tanks to contact with injected throw irrigation water for soil after incubation period. In dose 8 liters per one time in three times in succession At times in a row and compare with recommended dose from chemical fertilization as Supervision and advised by agronomists and conventional farmers have also taking this into account carefully.

The addition of biofertilizer at the same dates add chemical fertilizer.

Add demonstrate the impact use microorganisms as biofertilizer and the extent of the plant take advantage of usage and how important it is to plant.

Sampling and variables Measured:

After 3,4,5,6 and 7 days from planting 4 plants from each plot were carefully uprooted and roots were washed. Length of shoot (cm) per day after germination, Average of Fresh weight of shoots (g) and Average of length (cm) of shoots were estimated.

1. When we need to use the above components as probiotic to improve our health we don't incubate it but we use as its fresh in pure source. Uptake the solution orally from (1 – 2) times daily. Steps of using microorganisms and indications:

Lactobacillus corresponding to lactobacillus delbruekii and Lactobacillus fermentum. 10 billions in each time taken oral

Properties:

Antidiarrheal of microbial origin, with:

Enterocytes shielding property against the approach of pathogenic microorganisms.*

Non –specific immunostimlation of the mucosa (increase synthesis of IgA)*

*Direct bactestatic action, and stimulation of the growth of the defensive acidogenic intestinal flora.

Indications:

1- Symptomatic treatment of dairrheas.

2 weight gain and increased.

3- Improve immune system, digestion properties increase and body heath as general.

When we look carefully to solution which contain

1 – Molasses.

2- Lactic acid Bactria (yogurt).

3 - Yeast: Saccharomyces cerevisiae. (Beaker yeast). .

4- Lactobacillus delbruekii. - 5- Lactobacillus fermentum.

Nutritional value

Processed **cow's milk** was formulated to contain differing amounts of fat during the 1950s. One cup (250 ml) of 2%-**fat cow's milk contains** 285 mg of calcium, which represents 22% to 29% of the daily recommended intake (DRI) of calcium for an adult. Depending on the age, **milk contains** 8 grams of protein, and a number of other nutrients (either naturally or through fortification) .

2- Assessment effect of solution as bio-fertilizer on seedling and plant growth.

Added this Collection in tanks to contact with injected throw irrigation water for soil after incubation period. In dose 8 liters per one time in three times in succession At times in a row and compare with recommended dose from chemical fertilization as Supervision and advised by agronomists and conventional farmers have also taking this into account carefully.

The addition of biofertilizer at the same dates add chemical fertilizer.

Add demonstrate the impact use microorganisms as biofertilizer and the extent of the plant take advantage of usage and how important it is to plant.

The first application and 1st experiment which compare the difference between the use of bio-fertilizer and chemical fertilizer and the effect of it on plant.

3- Some experiments were performed to confirm the ability of microorganisms to reduction or decrease sulfides and decrease Ph and SS for wastewater.

After addition 1 ml from solution to 1 Liter of sewage (raw wastewater) and let it contact 3 – 5 hours the effect of microorganisms had occur in reduction of (TSS ,SS and pH) and also improve wastewater treatment and decrease bad odor which present in sewage water as results of fermenting organic matter and Decomposition of food remnants and Unwanted materials also found in wastewater .

Results and Discussion:

1- The experiments were done in (Abuqurqass wastewater treatment plant) as follow:

Compare between physical properties of raw water for wastewater before and after added microorganisms to other sample from the same type of raw water.

2 – The stool analysis and Microscopic *Examination were done in Elrahma lab. and El-Esraa lab. For medical analysis.*

1- (A) - To show the efficacy of Microorganisms as probiotic bacteria and improve the digestive system throws the regulation of digestion mechanism. The experiments' were done on three person with deferent age (adult male and female and young) the all experiments were done on animal before to insure complete safety of this

microogagansms on animals and human. And stool analysis was done every time for separate case to see stool analysis in two deferent medical labs.

Table (A- 4) effect of microorganisms on digestive system and metabolism.

From stool analysis for tree cases in medical laboratory analysis.

Microscopic *Examination:*

	Before ingestion bacteria	After ingestion bacteria
Undigestive food	(+ + +)	(+)
Undigestive food	(+ +)	(+)
Undigestive food	(+ + +)	(+)
Undigestive food	(+ + +)	Nil
Undigestive food	(+ + +)	Nil

(A-5) - Effect of microorganisms on Diarrhea:

In three replicates' the tests were done in 3 different ages from people to show the efficacy and suitably of using microorganisms in treatment of diarrhea.

The results of stool analysis:

Labortory report. ***Stool*** *Examination*

	Macroscopic appearance	Before treatment	After treatment
1	Consistency	Soft	Formed
2	Color	Pale yellow	Brown
3	Undigested food	(+ + +)	(+)
4	Mucus	(+)	Nil
5	**Microscopic appearance**		
6	Pus cells	*23 – 25/ H. P. F.*	7 - 10 */ H. P. F*
7	Epithelial cells	(+ +)	Nil
8	Starch	(+)	Nil
9	muscle fibers	(+)	Nil
10	Fat	(+)	Nil
11	Vegetative	Giardia lam. (+)	Nil
12	Cysts	En.Histolytica (+ +)	Nil

Consistency Changes from soft and liquid to solid and semi-formed in other cases. Some probiotics have been shown in preliminary research to possibly treat various forms of gastroenteritis.[51] A Cochrane Collaboration systematic review of the use of probiotics to treat acute infectious diarrhea found encouraging results, but said further research was necessary to confirm the reported benefits.[52][53] Antibiotic-associated diarrhea. Some of the best evidence in support of probiotic health benefits is in the treatment of antibiotic-associated diarrhea (AAD).[46] Antibiotics are a common treatment for children, and 20% of antibiotic-treated children develop diarrhea. AAD results from an imbalance in the colonic microbiota caused by antibiotic therapy. Microbiota alteration changes carbohydrate metabolism with decreased short-chain fatty acid absorption and an osmotic diarrhea as a result. The preventive role of some probiotics has been correctly assessed in randomly clinical trials. A review, assessing the work of 16 different studies representing more than 3400 patients' evaluation, concluded that the evidence gathered suggested a protective effect of some probiotics in this condition.[54][55] In adults, some probiotics showed a beneficial role in reducing the occurrence of antibiotic associated diarrhea.[56] . *Lactobacilli* have been extensively studied due to their remarkable ability to inhibit the growth of other organisms through bactericidal activity and by producing lactic acid as a byproduct of its metabolism.

Hence the present work aimed to investigate alternative therapeutic protocols that include probiotic products on some diseases such as Diarrhea.

2 - (B) - Use Microorganisms as biofertilizers.

After made mix for all contents and incubation was done the solution ready to use as biofertilizers in liquid form and put it in Separate tanks and injected with water through an irrigation system or spray.

There's no doubt about that. Healthy soils require organic matter (compost, humus, biochar, and other sources of carbon), microbes, and moisture to promote a healthy environment for plants. The result is strong plants, healthier flowers, greater resistance to diseases and pests, and higher quality fruits and vegetables.

Using Microorganisms as biofertilizers in comparison between chemical fertilization and biofertilization on same plant and same area under same conditions and parameters to show efficacy of biofertilizer.

Planted area was 1 acre pre each type of fertilizer. For Tomato.

With note that the weight of box about 20 kg approximately.

And harvest in plant (tomato which treatment with biofertilizer was 15 days early than other.

several reports were found on the plant growth promotion (perondi etal , 1996 ; Abd_El_Hafez and Shehata , 2001 ; El_Tarabily , 2004 ; El_ Mehalawy etal , 2004 ; Nassar etal 2003 , 2005) . The promotion of plant growth is mainly due to capability of some yeast to produce indole acetic acid, indole pyruvic acid, gibberellins, auxin, polyamines and ethylene. These compounds are known as plant growth hormones and as plant growth regulators

The primary organic and inorganic chemical components of vinasse are proteins, organic acids, amino acids, unfermented carbohydrates, vitamins, and minerals (Hidalgo, 2009). In particular, high concentrations of potassium, calcium, magnesium, sulfur, and nitrogen are typically found as components of vinasse, which makes it particularly attractive as a soil amendment/fertilizer. Glycerol, lactic acid, ethanol, and acetic acid (all byproducts of the fermentation process) are the major organic compounds found in cane and beet vinasse. The principal anions present are sulfate and chloride, with molasses stillage (i.e., distillation residue) having a higher salt loading than other stillages (Willington, 1982).

Table 1 - The difference fertilization of the potato between bio- fertilizer and the azotes fertilization (chemical): Effect of the Bio-fertilizer on Potato Production.

	Type of treatment	The amount of seeds	The planted area	Harvest time	The amount of crop output
1	Control (chemical F.)	1750 kg	1 ACRE	105 DAY	6000 kg/ ACRE
2	4liters bio+ ½ chemical F	1750 kg	1 ACRE	100 DAY	7900 kg/ ACRE
3	8 liters of biofertilizer	1750 kg	1 ACRE	85 DAY	8880 kg/ ACRE
4	4 liters of biofertilizer	1750 kg	1 ACRE	105 DAY	2650 kg/ ACRE
	Efficiency of bio (8)L. compared to the control	--------	---------	19.04 % Harvest time	32.4 % Increase in yield

Table 2 –Comparison the results between two types of fertilization by the same parameters. Of Maize crop Shami. Effect of the Bio-fertilizer on Production

Season 2013 Date of Agriculture

	Type of treatment	The planted area	Amount of yield crop	Harvest time	The amount of crop output
1	Control (chemical F.)	1 ACRE	25.5 Ardab	120 DAY	5655 kg/ ACRE
2	4liters bio+ ½ chemical F	1 ACRE	24 Ardab	115 DAY	5370 kg/ ACRE
3	8 liters of biofertilizer	1 ACRE	27 Ardab	100 DAY	5940 kg/ ACRE
4	4 liters of biofertilizer	1 ACRE	12 Ardab	125 DAY	3090 kg/ ACRE
	Efficiency of bio (8)L. compared to the control	--------	---------	16.6 %Harvest time	4.8 % Increase in yield

Table- 3: Effect of (Use Biofertilizer) on germination of wheat seeds and shoots elongation.

Type of treatment	Time (days) required for imitation of germination	Length of shoot (cm) per day after germination				
		Days				
		3	8	13	8	21
8 liters of biofertilizer	1	2.2	6	10	17.3	32
Control (chemical F.)	2	1.5	3.2	6	12	20
4liters bio+ ½ chemical F	2	1.6	2.4	8.5	13	25
4 liters of biofertilizer	2	1.4	2.1	5.2	9	16
4 liters of biofertilizer	2	1.3	1.6	2.3	7	10

Table. 4: Effect of (Use Biofertilizer) on Fresh weight and Length of wheat shoots after 20 days cultivation under ambient conditions

Tested solution contain microorganisms	Average of Fresh weight of shoots (g)	Average of length (cm) of shoots
R2 Control (chemical F.)	0215	24
8 liters of biofertilizer	0.268	26
4liters bio+ ½ chemical F	0.242	24
4 liters of biofertilizer	0.186	22
4 liters of biofertilizer	0.189	22
8 liters of biofertilizer	0.268	26

Tab. 5- : Effect of the Bio-fertilizer on Wheat Production: Season 2013

	Type of treatment	The planted area	Amount of yield crop	Harvest time	The amount of crop output
1	Control (chemical F.)	1 ACRE	22.5Ardab	120 DAY	3375kg / ACRE
2	4liters bio+ ½ chemical F	1 ACRE	24.5 Ardab	115 DAY	3675 kg/ ACRE
3	8 liters of biofertilizer	1 ACRE	26 Ardab	100 DAY	3900 kg/ ACRE
4	4 liters of biofertilizer	1 ACRE	16 Ardab	125 DAY	4200 kg/ ACRE
	Efficiency of bio (8)L. compared to the control	--------	---------	16.6 %Harvest time	13.5 % Increase in yield

Table 6- : Effect of the Bio-fertilizer on Wheat Production: Season 2014

	Type of treatment	The planted area	Amount of yield crop	Harvest time	The amount of crop output
1	Control (chemical F.)	1 ACRE	20 Ardab	120 DAY	**3000**kg / ACRE
2	4liters bio+ ½ chemical F	1 ACRE	21.5 Ardab	115 DAY	3225 kg/ ACRE
3	8 liters of biofertilizer	1 ACRE	23 Ardab	100 DAY	3450 kg/ ACRE
4	4 liters of biofertilizer	1 ACRE	13 Ardab	125 DAY	**1950** kg/ ACRE
	Efficiency of bio (8)L. compared to the control	--------	---------	16.6 %Harvest time	13.0 % Increase in yield

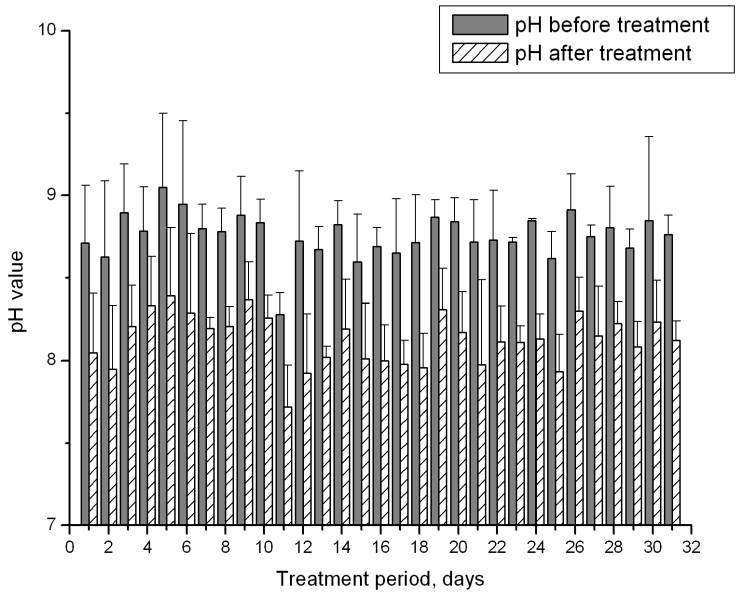
3- (C) - Wastewater treatment by microorganismis:

3.1. S.S decreasing by using microbial Treatment

Test No.	Before add microbial solution SS mg/l	After add Microbial solution SS mg/l	Efficiency (%)
1	349 mg/l	325 mg/l	6.9 %
2	258 mg/l	229 mg/l	11.2 %
3	262 mg/l	220 mg/l	16 %

3.2. Sulfides was also decreased by using this microorganisms in treatment wastewater as follow :

Test No.	Before add microbial solution sulfides mg/l	After add Microbial solution sulfides mg/l	Efficiency (%)
1	0.185 mg/l	0.075 mg/l	59.4 %
2	2.8 mg/l	1.2 mg/l	57.1 %
3	1.5 mg/l	0.4 mg/l	73.3 % %



3.3 - Compare the addition of microorganisms treatment with deferent times

Conclusion

From all results and tables which obtained showed that :

The ability of microorganisms as eco friendly and replacement chemicals and Meet the required purpose . so we must to consider this a great wealth of micro-organisms in all the important vital purpose

Immune function and infections.

Some strains of LAB may affect pathogens by means of competitive inhibition (i.e., by competing for growth) and there is evidence to suggest that they may improve immune function by increasing the number of IgA-producing plasma cells, increasing or improving phagocytosis as well as increasing the proportion of T lymphocytes and Natural Killer cells.[66][67] Clinical trials have demonstrated that probiotics may decrease the incidence of respiratory tract infections[68] and dental caries in children.[69] LAB products might aid in the treatment of acute diarrhea, and possibly affect rotavirus infections in children and travelers' diarrhea in adults,[66][67] but no products are approved for such indications. A 2010 study suggested that probiotics, by introducing "good" bacteria into the gut, may help maintain immune system activity, which in turn helps the body react more quickly to new infections. Antibiotics seem to reduce immune system activity as a result of killing off the normal gut bacteria.[70]

Some important components of the solution containing microorganisms and mechanism of action for each one.

1- Lactic acid bacteria are associated with fermented milk products were used to promote health benefits. The probiotics are helpful in balancing the microbial content in the gastrointestinal tract. They fight against pathogenic microorganisms that may cause ailments. They are a fraction of the microorganisms that live in the human digestive tract. LAB found in the gut flora, and helps improve intestinal functions. Probiotics in the

genus *Lactobacillus* can be found in foods or food supplements. Axelsson (1998) gives an in-depth account of the biochemical pathways for both homo- and hetero-fermenters. *And From Beuchat (1995)*
As results in tables (A4, 5).
And also important of Milk and other component as shown in tables (A 1,2and 3).
2- Using Microorganisms in agriculture fields give actual increasing for yields and plant crops as shown in results (2- B).
The microorganisms in bio-fertilizers restore the soil's natural nutrient cycle and build soil organic matter. Through the use of bio-fertilizers, healthy plants can be grown, while enhancing the sustainability and the health of the soil. Since they play several roles, a preferred scientific term for such beneficial bacteria is "plant-growth promoting rhizobacteria" (PGPR). Therefore, they are extremely advantageous in enriching soil fertility and fulfilling plant nutrient requirements by supplying the organic nutrients through microorganism and their byproducts. Hence, bio-fertilizers do not contain any chemicals which are harmful to the living soil. Bio-fertilizers provide eco-friendly organic agro-input and are more cost-effective than chemical fertilizers. (Vessey, J.k. 2003)79.
3- Using Microorganisms in wastewater treatment: Organic materials within wastewater originate from plants, animals or synthetic organic compounds, and enter wastewater via a number of routes including human wastes, detergents, and industrial sources (Taylor et al. 1997). In the current wastewater treatment process (either municipal or domestic on-site) microorganisms play a significant role in the treatment of domestic sewage. Many different
Organisms live within the wastewater itself, assisting in the breakdown of certain organic pollutants (Taylor et al. 1997).The basis for using these species of microorganisms is that they contain various organic acids due to the presence of lactic acid bacteria, which secrete organic acids, enzymes, antioxidants, and metallic chelates (Higa & Chinen 1998).
The experiments were done in (Abuqurqass wastewater treatment plant) as follow:
Compare between physical properties of raw water for wastewater before and after added microorganisms to other sample from the same type of raw water.

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