



The Biological Action of Some Natural Additives

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Abstract

Since ancient times humans have been keen to improve their food taste by using natural or processed additives for example in Iraq people used to add *stachys pseudopinardii* to legumes and use of *seidlitzia rosmarinus* instead of sodium bicarbonate in the preparation of legumes and add *Rhus coriaria* to entremets and meat. This study investigated the anti-microbial activity of aqueous extract of the three plants against some bacteria and fungus 100, 500, 1000 mg/mL were the concentration which used in this study, *Rhus coiaria* has the highest activity than *stachy pseudopinardii* finally *Seidlitzia rosmarinus*.

Keyword: *Natural additives, biological, activity, bacteria, fungus.*

Introduction

Food additives are substances which added to food either improve the flavor texture, colour, taste or function. Natural flavor are substances such as spices, herbs and essential oils have been used in the past as flavor additives [1]. Many of herbs used today for their anti-microbial effects and flavor in addition for their medicinal powers [2].

A number of studies suggest that natural phytochemical compounds have been used as anti-microbial [3]. *Rhus coriaria* (Commonly known as sumac) this plant exhibit a wide range of biological and antiviral [4]. *Stachys pseudopinardii*: This plant has 90 species [5]. *Stachys* used in physiotherapy, some *stachys* species are used as atonic and for stomach ailments [6]. *Seidlitzia rosmarinus* is a perennial woody plant grown along the blankets of salt marshes; *Seidlitzia* has many industrial applications such as dyeing, making soaps [7].

To our knowledge studies are almost limited about *Seidlitzia* activity against microorganism. The current study was searched into possibility of using these herbs as preservative rather than synthesis compounds.

Experiments

The cold extraction method was used to obtain extracts and then prepare the concentration (100, 500, 1000 mg/mL)

Measuring Inhibitory Effectiveness

The antimicrobial activity of the plants was estimated against *Staph. aurece*, *Bacillus. Subtilis*, *E. coil*, *Enterobacter SP*, *Klebsiela Pneumoniae* and *Candida albicans*, *Candida glabrata*, *Candada paropsilosis*, *Candida tropicalis*, *Fusarium graminearum*, *Aspergillus niger*. By well diffusion method for bacteria and fungus [8].

Result

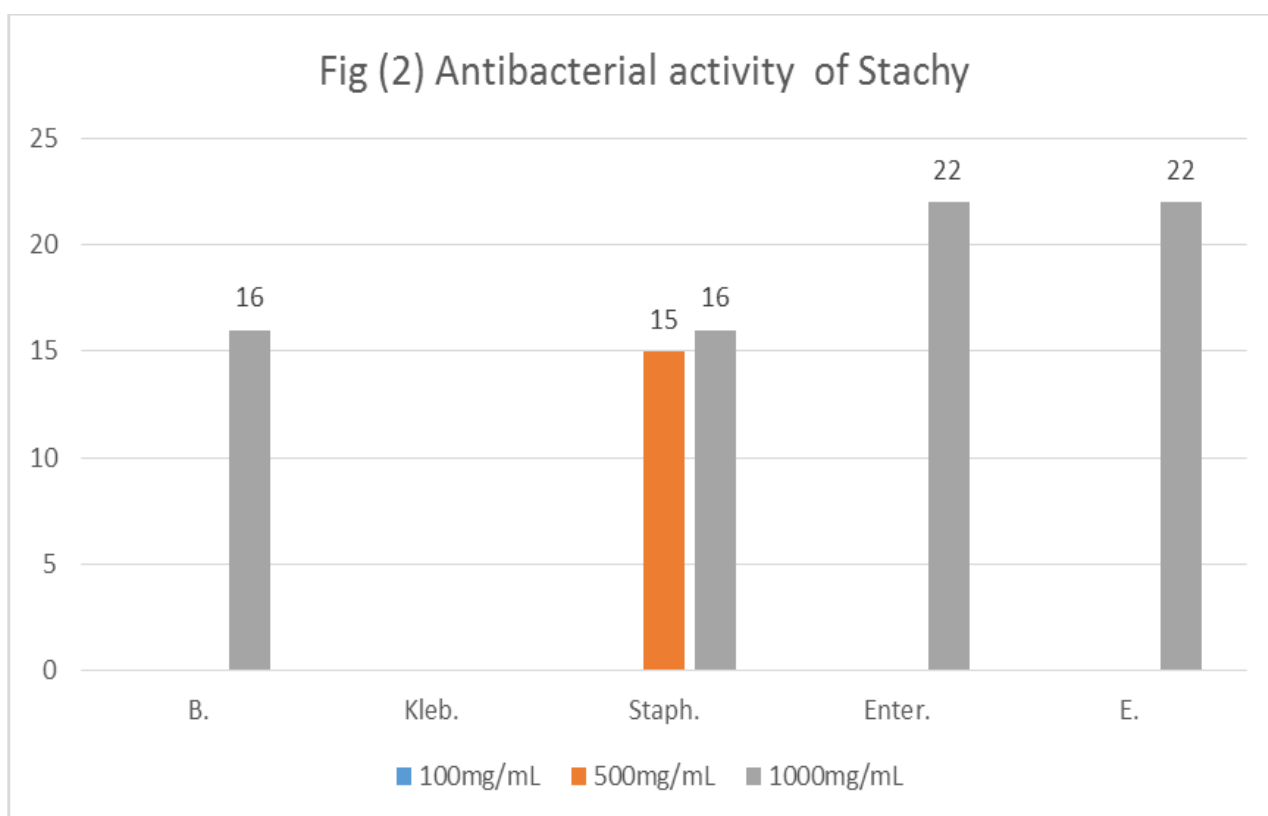
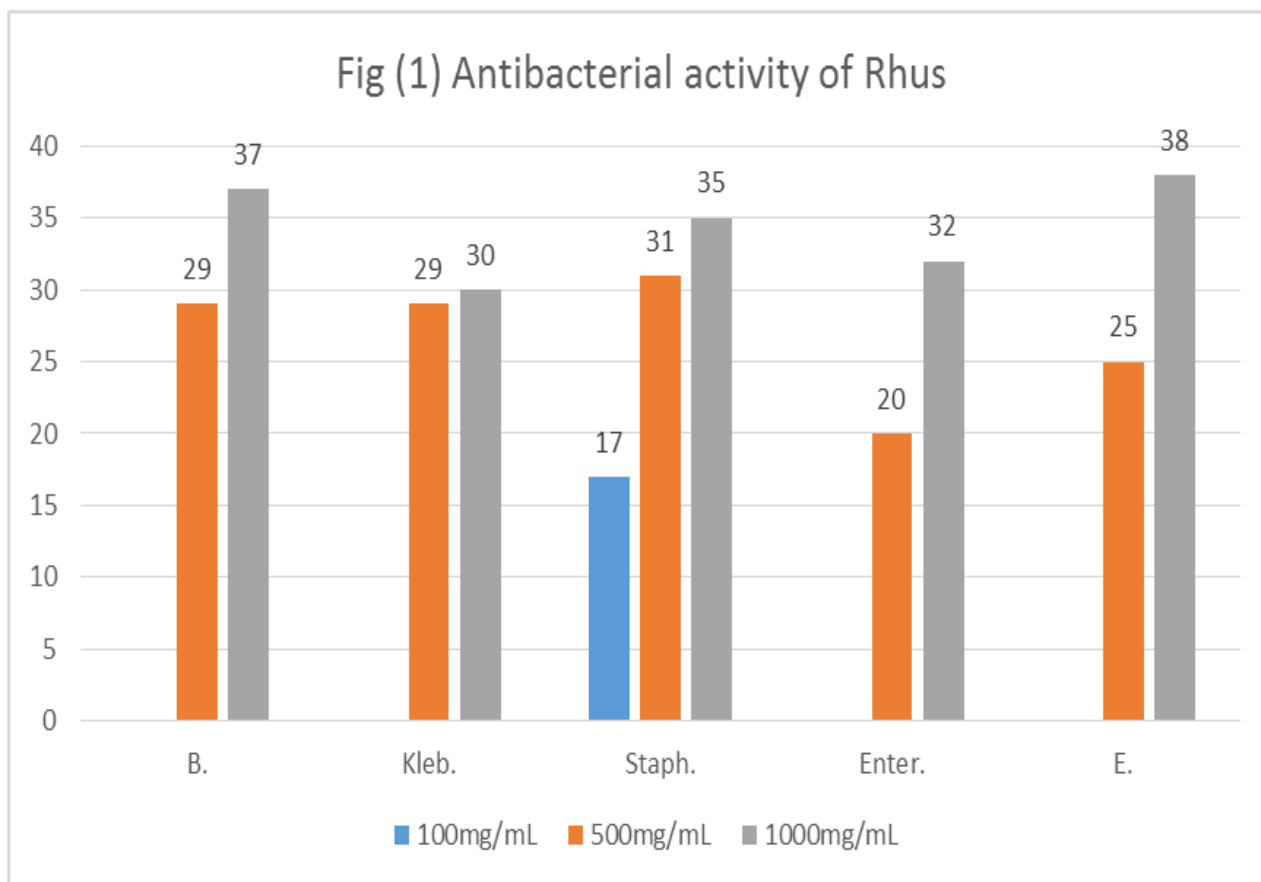
Concerns about the use of synthesis additives in food have been increased at last years, so we tried to contribute to finding natural alternatives. Fig (1) showed the activity of equeous extract of sumac as anti-bacterial against *S. aureus*, *B. subtilis*, *E. coil*, *Enterobacter SP* and *Klebsiela Pneumoniae* from the result appeared that equeas extract of sumac has a strong inhibitor activity especially at the concentration 1000 mg/mL.

In this study the MIC was 100 mg/mL while Fig (2) show the inhibitor effect of *stachys*

1000 mg/mL the extract of it was active against all bacteria under consideration.

The result of seidlitzia extract was the weakest as apparently appears in Fig (3) seidlitzia was more active against Stapy and Bacillus but did not show any antibacterial

effect against *E, Kleb, Entero*. The antifungal activity for the three plants appears in Table (1). From the table we can see that Rhus (sumac) extract has the best biological action against funges.



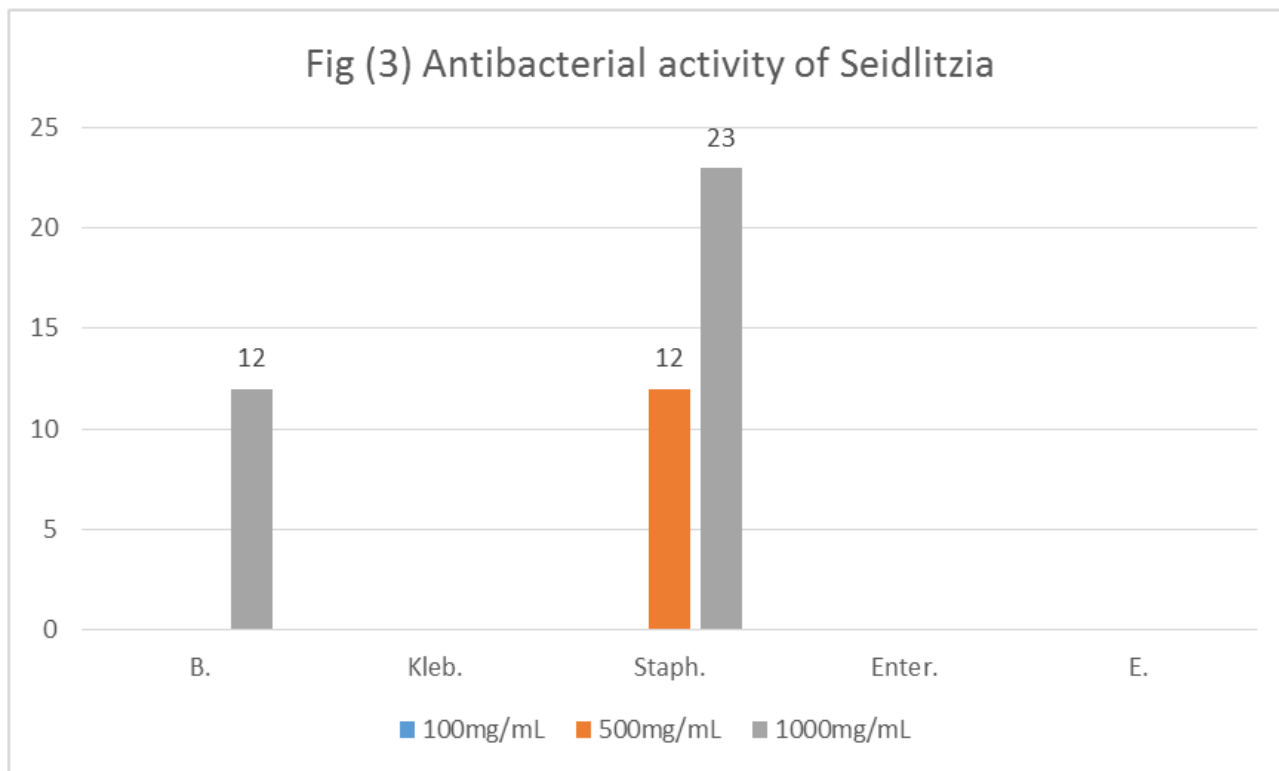


Table 1: Anti fungus of the three plants

Funges	Inhibition zone	Samples
Candida albicans	16	Rhus
	-	Stachy
	-	Seidlitzia
Candida glabrata	13	Rhus
	-	Stachy
	-	Seidlitzia
Candada paropsilosis	13	Rhus
	-	Stachy
	-	Seidlitzia
Candida tropicalis	12	Rhus
	-	Stachy
	-	Seidlitzia
Fusarium graminearum	23	Rhus
	-	Stachy
	-	Seidlitzia
Aspergillus niger	-	Rhus
	-	Stachy
	-	Seidlitzia
Penecillium expansam	-	Rhus
	-	Stachy
	-	Seidlitzia

Discussion

Natural additives are an important source of active compounds which has antimicrobial activity [9]. The results showed that Rhus

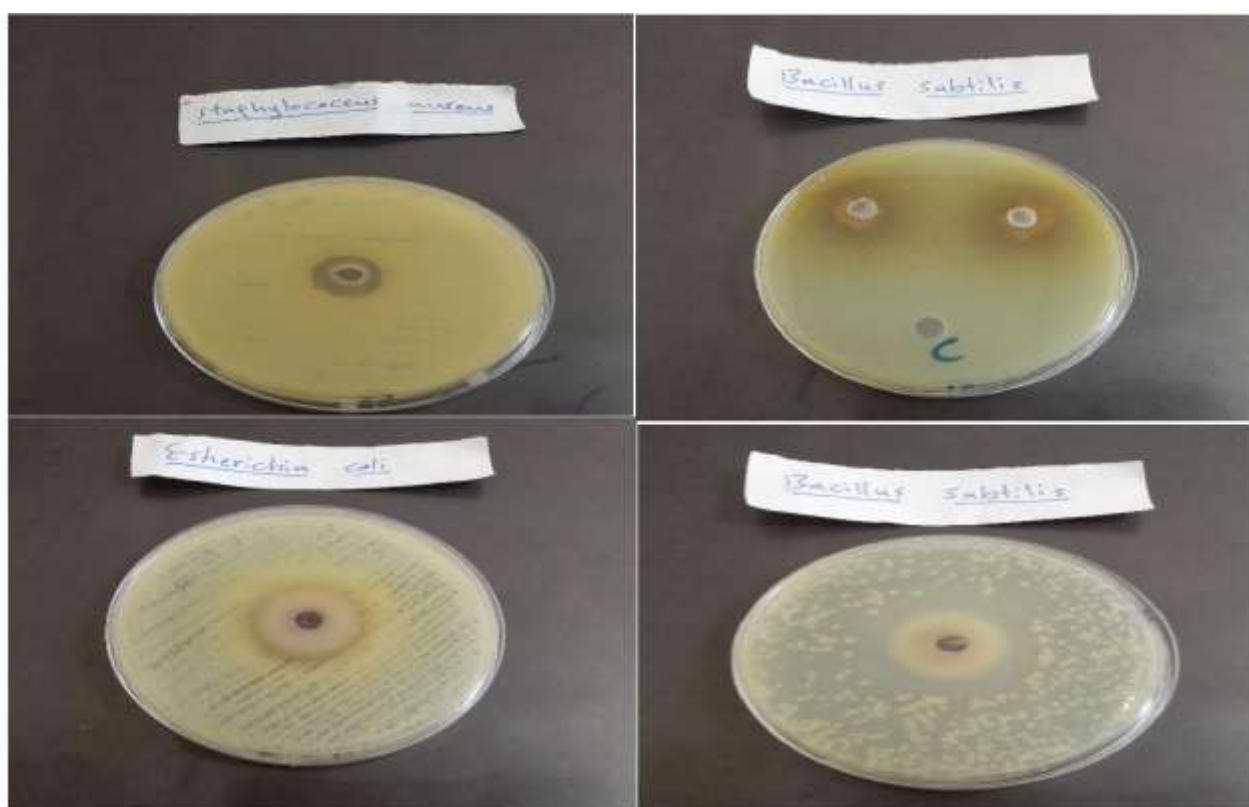
has the highest inhibitory effect this may be due to presence of the phytochemical groups which found in this plant like a galic acid

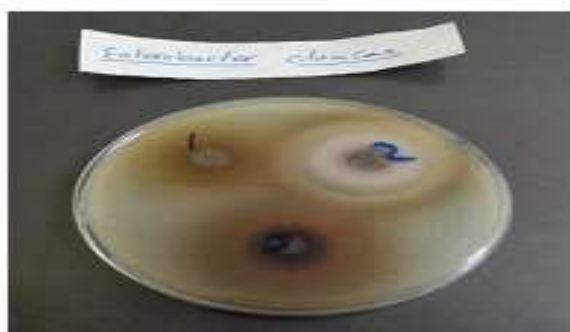
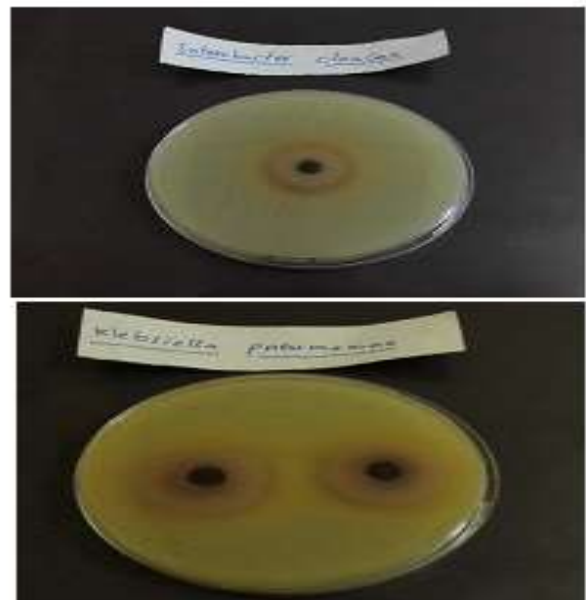
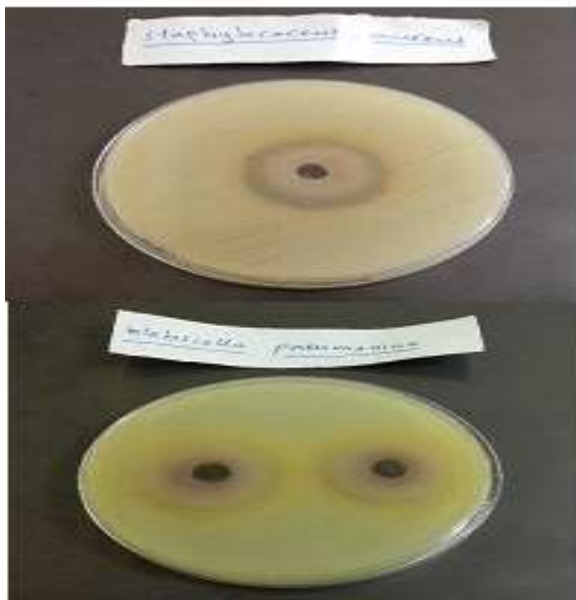
ellagic acid, tanic acid, myricetin and quercitrin each of these groups has antibacterial effect against bacteria [10].

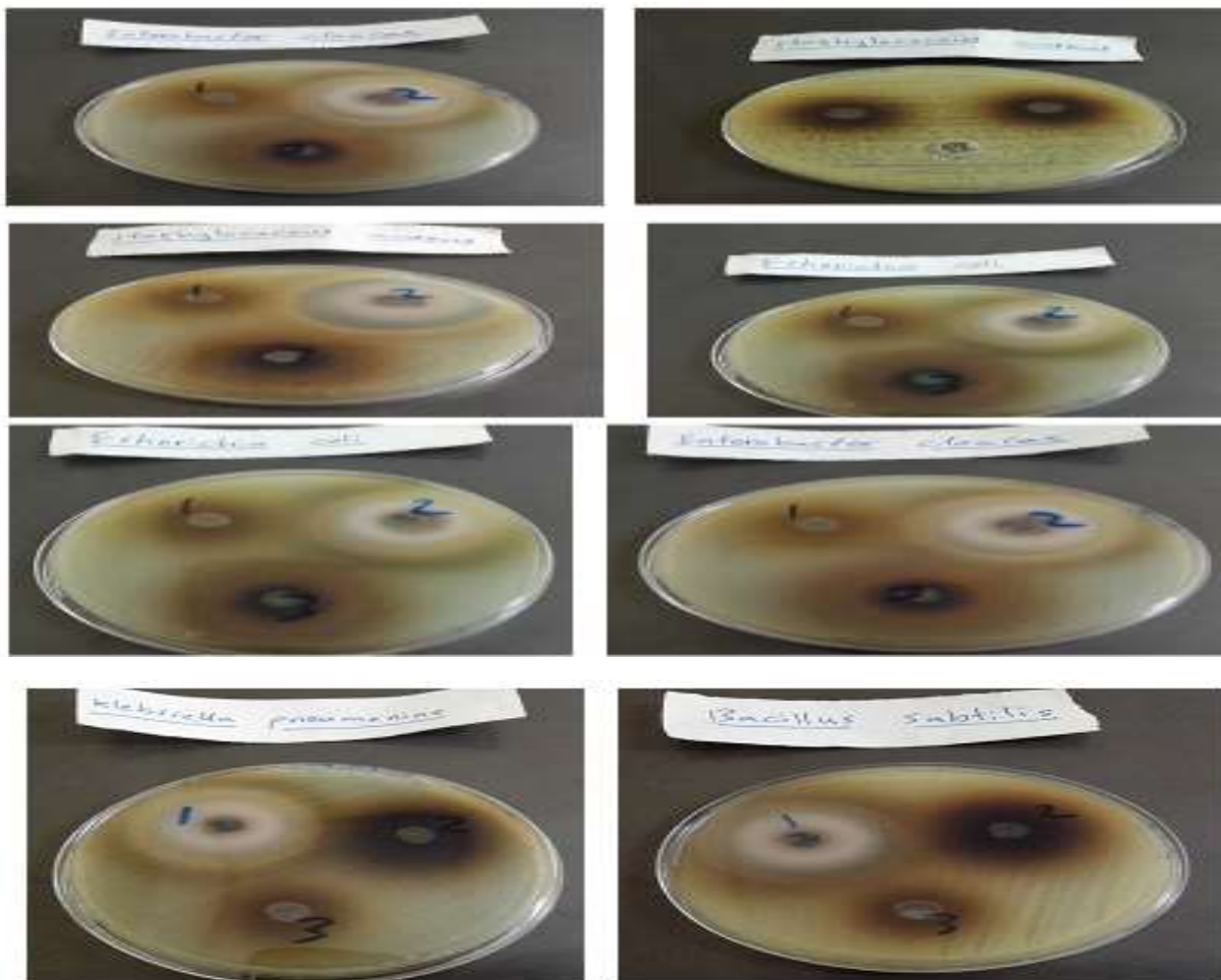
Polar compounds which can be extracted by water appear to be responsible for the observed for the inhibitory activities [11]. Than stachys has good activity against microorganism. Phytochemical analyses of stachys species have flavonoids, glycosides and saponines [12]. They activity of flavonoids is probably due to their ability to complex with extra cellular and soluble

protein and to complex with bacterial cell wall [13]. The plant saponins posses antifungal, antibacterial and anti-inflammatory [14].

Finally, Seidlitzia which demonstrated inhibitor activity [15] reported that this plant has medicinal properties therefore it used for the treatment of some acnes. The results prored increased concentration of extract will lead to increase disrupting of cell in all strains tested [16].







The antimicrobial activity of the three plants

Conclusion

We could conclude that many of natural additives used in Iraq exhibited operant anti-microbial activities.

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