A Wild-plant extract could eliminate infectious-pathogens, Ranyah, KSA

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Abstract

Saudi Arabia is rich in *Juniperus procera* Hochst. ex Endl (Cupressaceae) as a medicinal plant. Its known as Arar, its present southwards, KSA. It's used as traditional medicine in the southwestern, KSA. The aim was according to "Saudi Arabian Customs" in using wild-plant extract for treatment and prevention of infectious-pathogens. That was to use *Juniperus procera* from Ranyah, KSA to eliminate infectious-pathogens that were isolated from patients in the same area. This was the use may reduce the use of chemicals, as well it may be an alternative to chemotherapy. Practice included preparation of wild-plant extract, preparation of infectious-pathogens, interaction to wild-plant extract, and direct total cell count by "Bread Test". *Juniperus procera* one crude concentration killed all infectious-pathogens during one day. Lower *Juniperus procera* crude extract concentrations eliminated infectious-pathogens within more than one day. The mean number of dead sells / mL of *Staphylococcus* sp., *Streptococcus* sp, and *Streptococcus pyogenes* were (84.9 / mL, 87.0 / mL, and 77.8 / mL). The mean percent of dead cells were (80.0%, 82.0%, and 73.4%). The mean number of dead sells / mL of *Salmonella* sp., *Shigella* sp, and *Escherichia coli* were (72.6 / mL, 76.1 / mL, and 79.0 / mL). The mean percent of dead cells were (68.5%, 71.8%, and 74.5%). The mean number of *Candida albicans* dead sells / mL was 69.3 / mL, the mean percent of dead cells was 65.4%. It was concluded that found from the results, the *Juniperus procera* extract was preferred "Saudi Arabian Customs" to be used in three quarter and one crude concentration, as the infectious-pathogens eliminating within one day. It was recommended that the *Juniperus procera* extract will be used for herbal treatment according to "Saudi Arabian Customs". That will be remark and follow-up through the "Official Herbal Treatment Dept.". That will appropriate the doses will estimate for each patient to eliminate and protect against the infectious-pathogens.

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Introduction

Saudi Arabia is rich in *Juniperus procera* Hochst. ex Endl (Cupressaceae) as a medicinal plant [1]. Its known as Arar, its present southwards, KSA [2]. It's used as traditional medicine in the southwestern, KSA [3]. It's widely present in Al-Baha, used in treating pharyngitis, cold, gastritis, and wound healing [4]. As well it is

wide distributed in Asir and Hijaz mountains, KSA, its essential oils, had anti-infectious microbial action [5]. It considers in KSA a medicinal plant, used usually to wound healing [2]. This essential oil are alkanes, monoterpene alcohols or lactones [6]. Also, δ-3-carene as (7–30%) as well α-pinene (31–63%) [5]. As well has abieta-7-13-diene, isocupressic acid, ferruginol zcommunic, 4 epi-abietol, sugiol acid, and totarol [7]. Leaves, also vital oil has lignan β-peltatin, deoxy-podophyllotoxin, isocupressic acid, zcommunic acid, totarol and sugiol [8-9]. Totarol had action on infectious-pathogens [10]. Phenolic compounds had anti-infectious microbial inhibitory action [11]. They had many anti-infectious microbial, and anti-infectious mycobacterial compounds [7]. The phenolic, flavonoid and totarol had strong anti-infectious bacteria and anti-infectious candida activity [11]. The vital oil had anti-infectious bacterial activity [12]. The leaves extract from Al-Baha had the highest anti-infectious bacterial activity against Gram-positive infectious bacteria and treated wound healing [2]. The extract had anti-infectious bacterial activities against *Staphylococcus aureus* [11]. Also, essential oil had strong fungicidal activity against yeasts, yeast-like fungi and dermatophytes [12]. Water extracts had anti-infectious candida action against *Candida albicans* [11]. The extract had higher anti-infectious fungal in regulatory the fungi growth [13].

The aim was according to "Saudi Arabian Customs" in using wild-plant extract for treatment and prevention of infectious-pathogens. That was to use *Juniperus procera* from Ranyah, KSA to eliminate infectious-pathogens that were isolated from patients in the same area. This was the use may reduce the use of chemicals, as well it may be an alternative to chemotherapy.

Materials and Methods

- *Preparation of wild-plant extract*: The leaves of *Juniperus procera* were collected and were classified from the Ranyah, KSA, at the flowering time. They were prepared to produce the boiling water extract according to the Saudi Arabian customs. Five grams of the leaves were simmered into two hundred and fifty mL of purified water. The boil water was filtered, the gradual dilution was made using distilled water to (1/4 crude, 1/2 crude, 3/4 crude, and 1 crude) [14]

- *Preparation of infectious-pathogens*: They were obtained from the laboratory after diagnosis, isolation and identification. They were included wound causes (*Staphylococcus* sp., and *Streptococcus* sp.). Tonsillitis cause was *Streptococcus pyogenes*. Gastroenteritis causes were (*Salmonella* sp., and *Shigella* sp.). Urinary tract infection cause was *Escherichia coli*. Oral and vagina candidiasis causes were *Candida albicans*. Activation of them were by culturing on "Mueller Hinton Broth"; (Lab. M. Ltd., UK) for 18-24 hour at 35-37 ºC. They were attuned to 106 Living cell / mL for exposure to wild-plant extract graduated dilutions [15].

- *Interaction to wild-plant extract*: The microtitration plates were used for mixing the fixed infectious-pathogens suspensions and the wild-plant extract graduated dilutions. The microtitration plates were incubated at room temperature for the following times (overnight (12-18 hour), and one day) [16]

- *Direct total cell count by "Bread Test*": The degraded slide was used, a loop full was placed from each microtitration plate well. The film was fixed and was simple stained then was washed. The cells were counted in ten microscopic fields. The following laws were applied to calculate the number and percent of dead cells.

Number of dead cells / mL = *106 - (Mean cells in ten fields X *100 X *5000).

*106: Basic living cells / mL.

*100: Volume of one loop full.

*5000: Constant Standard Numbers.

Percent of dead cells = (Number of dead cells / *106) X 100. [17]

- *Data analysis:* The results were designed via "IBM Simple Statistics"; (IBM, Armonk, NY, United States) [18].

Results and Discussions

Number of dead cells / mL and percent of dead cells after interaction to wild-plant extract: Table (1 & 2) observed *Juniperus procera* one crude concentration killed all infectious-pathogens during one day. Lower *Juniperus procera* crude extract concentrations eliminated infectious-pathogens within more than one day. Only three *Staphylococcus* sp., *Streptococcus* sp, and *Streptococcus pyogenes* were eliminated by concentration of *Juniperus procera* extract three quarters crude during one day [1-7].

The effects were different on the infectious-pathogens, the most affected were *Staphylococcus* sp., *Streptococcus* sp, and *Streptococcus pyogenes*. The mean number of dead sells / mL were (84.9 / mL, 87.0 / mL, and 77.8 / mL) respectively. The mean percentage of dead cells were (80.0%, 82.0%, and 73.4%) respectively. They were most affected by the *Juniperus procera* extract at all concentrations were completely eliminated by concentration of three quarters of crude before other infectious-pathogens [8-11].

The less affected were *Salmonella* sp., *Shigella* sp, also *Escherichia coli*. The mean number of dead sells / mL were (72.6 / mL, 76.1 / mL, and 79.0 / mL) respectively. The mean percent of dead cells were (68.5%, 71.8%, and 74.5%) respectively. They were less pretentious by the *Juniperus procera* extract at all concentrations were completely eliminated by concentration of one crude [8-11].

The more less affected was *Candida albicans*, the mean number of dead sells / mL was 69.3 / mL. The mean percent of dead cells was 65.4%. They were more less affected by the extract at all concentrations was completely eliminated by *Juniperus procera* extract concentration of one crude [11 -13].

Through the results, were originated the concentrated extract was more powerful to eliminate all infectious-pathogens within one day. The lowest concentrated extract took more than one day to completely eliminate infectious-pathogens [8-11].

Juniperus procera is usual in the southwest of the KSA. The "Saudi Arabian Customs" use extract is still in line with "Ancient Arab Customs" to treat infectious-pathogens. That is for reducing use of medicines and decreasing the treatment costs [1-7].

However, it is necessary to healthy treated evaluate the extracts through the "Pharmacy Branch" for safe herbal therapeutic use. That is in order to rapidity recovery from infectious-pathogens and do not affect the patient's health [1-7].

Conclusion

It was concluded that found from the results, the *Juniperus procera* extract was preferred "Saudi Arabian Customs" to be used in three quarter and one crude concentration, as the infectious-pathogens eliminating within one day.

Table 1. Number of dead cells / mL after interaction to wild-plant extract

Item	1/4 Crude		1/2 Crude		3/4 Crude		1 Crude		X̄ Mea
	Over-night	1 Day	Over-night	1 Day	Over-night	1 Day	Over-night	1 Day	
Staphylococcus sp.	41±1	72±2	74±2	98±2	81±1	106	101±1	106	84.9
Streptococcus sp.	49±1	78±2	73±1	97±1	87±1	106	100±2	106	87.0
Streptococcus py-	32±2	61±1	58±2	86±2	83±1	106	90±2	106	77.8
Salmonella sp.	26±2	51±1	59±1	88±2	70±2	99±	82±2	106	72.6
Shigella sp.	28±2	58±2	61±1	89±1	82±2	100	85±1	106	76.1
Escherichia coli	32±2	61±1	63±1	92±2	84±2	103	91±1	106	79.0
Candida albicans	21±1	52±2	51±1	79±1	73±1	90±	82±2	106	69.3

Table 2. Percent of dead cells after interaction to wild-plant extract

Item	1/4 Crude		1/2 Crude		3/4 Crude		1 Crude		X̄ Mean
	Over-night	1 Day	Over-night	1 Day	Over-night	1 Day	Over-night	1 Day	
Staphylococcus sp.	38.7±0.1	67.9±0.1	69.8±0.2	92.5±0.1	76.4±0.2	100±0.0	95.3±0.1	100±0.0	80.0
Streptococcus sp.	46.2±0.2	73.6±0.2	68.9±0.1	91.5±0.1	82.0±0.2	100±0.0	94.3±0.1	100±0.0	82.0
Streptococcus py-ogenes	30.2±0.2	47.5±0.1	54.7±0.1	81.1±0.1	78.3±0.1	100±0.0	85.0±0.2	100±0.0	73.4
Salmonella sp.	24.5±0.1	48.1±0.1	55.7±0.1	83.0±0.2	66.0±0.2	93.4±0.4	77.4±0.2	100±0.0	68.5
Shigella sp.	26.4±0.2	54.7±0.1	57.5±0.1	84.0±0.2	77.4±0.2	94.3±0.1	80.2±0.2	100±0.0	71.8
Escherichia coli	30.2±0.2	57.5±0.1	59.4±0.1	86.8±0.2	79.2±0.2	97.2±0.2	85.9±0.1	100±0.0	74.5
Candida albicans	19.8±0.2	49.0±0.2	48.1±0.1	74.5±0.1	68.9±0.1	85.0±0.2	77.4±0.2	100±0.0	65.4

Recommendation

It was recommended that the *Juniperus procera* extract will be used for herbal treatment according to "Saudi Arabian Customs". That will be remark and follow-up through the "Official Herbal Treatment Dept.". That will appropriate the doses will estimate for each patient to eliminate and protect against the infectious-pathogens.

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