

Summary: The current study included the extraction and identification of some active chemical compounds from the brown alga *Sargassum sp.* and brown algae *Laminaria sp.* and studying the effect of the inhibitory activity of extracts of these two algae against some types of pathogenic bacteria that included *Pseudomonas aeruginosa*, *Escherichia coli*, *Salmonella sp.*, *Bacillus cereus*, *Staphylococcus aureus* and *Streptococcus mutans*, where the active chemical compounds were extracted from these two algae using different solvents (cold water, methanol alcohol, and ethanol) with qualitative detections of secondary metabolites of the aqueous extracts of both algae, which indicated the presence of chemically active compounds such as alkaloids, phenols, flavonoids, glycosides, terpenoids, tannins, saponins, carotenoids, steroids and amino acid. The cytotoxicity of the aqueous extract of both algae against human red blood cells was tested, as no toxicity of the algal extract was shown throughout the experiment. The active chemical compounds, which have the highest percentage among the other compounds, were identified using Gas chromatography mass spectrometry (Gc-mass) technique of the methanolic extract of *Sargassum sp.* These compounds were Oleic acid, n-Hexadecanoic acid and Tetradecanoic acid. The methanolic extract of *Laminaria sp.*

Compounds with inhibitory activity were D-Glucitol, 1,4-anhydro-, n-Hexadecanoic acid and Oleic acid.

The ethanolic extract of *Laminaria sp.* Compounds with inhibitory activity were n-Hexadecanoic acid, Oleic acid and cis-5-8,11,14,17-Eicosapentaenoic acid.

Ready-to-use bacterial isolates were obtained from Al-Hussein Teaching Hospital and the general health hospital in Nasiriyah district/Dhi Qar governate and kept in the refrigerator at 4°C until use. Different concentrations of algae extracts were prepared *Sargassum sp.* and *Laminaria sp.* (50, 100 and 150) mg/ml to study its effect on the bacterial species under study, by measuring the diameter of the bacterial growth inhibition zone.

The aqueous extract of *Sargassum sp.* and *Laminaria sp.* Any biological activity against all bacterial species under study.

It was noted that the methanol extract of *Sargassum sp.* It was more efficient in its effect on bacterial species, as the average diameters of the inhibition zones reached (16.00, 18.66, 16.66, 19.00, 19.33 and 22.66) mm for each of *P. aeruginosa*, *E. coli*, *Salmonella sp.*, *B. cereus*, *Staph. aureus* and *S. mutans*, respectively, in comparison with the average diameters of the inhibition zones of the ethanolic extract that were (15.66, 15.00, 15.66, 19.33, 10.00 and 11.00) mm, respectively.

The results of the study showed that the methanolic extract of

Laminaria sp. It was more efficient in its effect on bacterial species, as the average diameters of the inhibition zones were (16.33, 16.00, 15.66, 16.33, 18.00 and 18.66) mm for *P. aeruginosa*, *E. coli*, *Salmonella sp.*, *B. cereus*, *Staph. aureus* and *S. mutans*, respectively, in comparison

with the average diameters of the inhibition zones of the ethanolic extract, which were (15.00, 13.33, 12.33, 16.00, 12.00 and 13.33) mm, respectively.

It was clear from the results of the study that the effect of the methanol and ethanolic extract of *Sargassum sp.* It was more efficient and effective in eradicating, and inhibiting the growth of bacterial species as compared to *Laminaria sp.*

The results of the current study showed that *P. aeruginosa* bacteria are high sensitivity to (100%) to Gentamicin, Cefepime and Levofloxacin, (80%) sensitive to Amikacin, (90%) sensitive to Gentamicin, and medium (100%) to Ciprofloxacin *E. coli* showed a high (100%) resistance to Ceftazidime, (100%) sensitive to Amikacin and Ciprofloxacin, 90% sensitive to Gentamicin, and medium (100%) to Ciprofloxacin. The bacteria *Salmonella sp.* showed a highly resistance of (100%) to the antibiotics Cefotaxime, Cefixime, and Ciprofloxacin, and resistance to (90%) to the antibiotic Ceftriaxone. The bacteria *B. cereus* Highly resistance (100%) to Ceftazidime, and sensitive (100%) to Ciprofloxacin and sensitive (80%) Gentamicin and medium (100%) Amikacin. It showed *Staph. aureus* is highly resistant (100%) to Doxycycline, and Tobramycin, sensitive (80%) to Levofloxacin, and medium (100%) to Clindamycin. *S. mutans* showed a high resistance of (100%) to Ceftiaxone, and it was sensitive (100%) to Cefotaxime, and Levofloxacin, and it was medium (90%) to Cefepime