iJRASET
International Journal For Research in Applied Science and Engineering Technology

INTERNATIONAL JOURNAL FOR RESEARCH

IN APPLIED SCIENCE & ENGINEERING TECHNOLOGY

Volume: 10 **Issue:** VI **Month of publication:** June 2022

DOI: https://doi.org/10.22214/ijraset.2022.44393

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International Journal for Research in Applied Science & Engineering Technology (IJRASET)
ISSN: 2321-9653; IC Value: 45.98; SJ Impact Factor: 7.538
Volume 10 Issue VI June 2022- Available at www.ijraset.com

Comparative Pharmacological Activities of *Gracilaria Corticata* and *Sargassum WIGTII*

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Abstract: ***Algae has been used as traditional medicine for centuries. Alage is used as one of the important medicinal sources due to its antioxidant, anticancer, and antiviral properties. Sargassum wightii contains polysaccharides, which support healthy blood pressure and blood sugar. It has anti-bacterial and antioxidant properties. The common name of S.wightii is known as phaeophyta (brown algae). Gracilaria corticata is used as a food for humans and various species of shellfish. The common name of G. corticata is known as Rhodophyta (red algae). It was collected and processed with a vaccum evaporator and, using SOXHILATION apparatus, the solvent was extracted and the bioactive compound was analysed. The results were later carried out by the based on the results. Anti-artharitic, antioxidant, anticholesterol, and antimicrobial activity in various microorganisms were studied. It showed positive results and confirmed the possession of antiarthritic, antioxidant, anticholesterol, and antimicrobial activity. Yet the studies are limited and future studies should be carried out.***
Keywords: Sargassum Wightii, Gracilaria Corticata, Antioxidant, Anticholesterol, Antiarthritic, SOXHILATION Apparatus.

I. INTRODUCTION

Algae are defined as a group of predominantly aquatic, photosynthetic, and nucleus-bearing organisms that lack the true roots, stems, leaves, and specialized multicellular reproductive structures of plants.

Gracilaria is a genus of red algae (Rhodophyta) notable for its economic importance as an agarophyte, as well as its use as a food for humans and various species of shellfish. Various species within the genus are cultivated among Asia, South America, Africa and Oceania. The brown alga Sargassum wightii is one of the marine algal species rich in sulfated polysaccharides that possess a wide spectrum of biological properties, such as free radical scavenging and antioxidant effects.

Algae is grown in seawater as well as in desert ponds. Algae can also grow in waste water and water containing phosphates, nitrates and other contaminants. Since algae is carbon neutral, it can help the environment by taking CO2 from the air. Algae farms can be located near carbon producing refineries or power plants Red and green algae are rich in molecules with antiviral, antioxidant, antifungal and antimicrobial activities. Because of its great nutritional value, S. platensis has been used since olden times as a resource of food. It is prospered in nutrients like minerals, protein, carbohydrates, vitamins and (γ)-linolenic acid. In recent years, it is getting more and more consideration, not only owing to its food value, but also for the progress of research of its potential pharmaceuticals. Gracilaria is used as a foodstuff in Japan, Hawai and Philippines. It is called ogonori or ogo in Japanese cuisine, as gulaman or guraman in Philippines.The present research work was planned to examine the bioactive compounds and antioxidant activity of G. corticata and S. platensis marine. Algae have a great range of shapes and sizes, from spherical cells with 0.5 μm diameter to 60 m long multicellular thalli. There are about 72,500 validly described species of algae; they live in the top 300 m of marine and inland waters, and on land, as free-living organisms or in symbiosis.

II. MATERIALS AND METHODS

A. Collection Of Sea Weeds

The brown algae(SARGASSUM WIGTII) and red algae(GRACILARIA CORTICATA) was collected on the seashore of mandapam region, Ramanathapuram district, Tamilnadu, India.

The collected Samples were washed by the Distilled water and stored laboratory.The washed sample was dry in 2 days in room temperature at dark condition.After complete dry the sample was getting powder form.

B. Extraction Of Sea Weeds

15g of red and brown algae was mixed with 100 ml distilled water.The mixed samples was extracted using Soxhilation Extraction Method. The extraction filtered it even further.

C. Bio Active Compound Analysis (Brown Alage, Red Algae)

The samples (Brown algae and Red algae) was collected and stored. From which 1 ml of samples were taken in a 10 ml test tube and by adding required amount of distilled water the solution was made up to 10 ml. To which the bioactive reagents was added which are [Alkaloids-200ul Wagner's reagent, Flavonoids-NaoH(200ul), Phenol-ferrichloride(200ul), Protein-Ninhydrin(200ul), Tannins-1%ferrichlorode(200ul), Glycosides-chloroform(100ul),H2So4(100ul) Phytosterol-H2So4(100ul), R.Sugar-Fehlings soln(A) and (B) respectively (100ul),Steriods-chloroform(100ul),acetic hydride(100ul),Saponins-Water(200ul).The colour changes will be observed

D. Anti-Artharitis Activity

In total 6 test tubes for taken along with BSA solution. Each test tubes were made up to 100ml solution as follows the contact in the steps were mixed well after which it was incubated at 27° c for 15 minutes after which 900 ul of distilled water was added to each test tubes which one second was mixed and kept in water bath for 10 minutes at 70 degree Celsius from which the reading was taken in spectrometer at 600 nanometer

E. Anti-Microbial Activity

The extraction of brown and red algae tested against various microorganisms such as E.COLI,S.AUREUS, BACILLUS, PSEUDOMONAS. The nutrient agar plates are plotted in four wells, a 50Ul sample was injected plates were kept at 37°C for incubation at 24 hours. Finally, they will be observed

F. Anticholestrol Activity

High levels of cholesterol or other fats (lipids) in the blood (hyperlipidemia). Early research shows that brown-green algae lowers cholesterol in people with normal or slightly elevated cholesterol levels.

The cholesterol will be prepared using chloroform.

The extracted sample 10ul of brown and red algae is added to 10ulof cholesterol content will be mixed with 20ul Distilled water.after 2ml of phosphate buffer will be added and mixed well.after mixing the sample to incubated at room temperature in 30 mins.After incubated to take reading in UV spectrophotometer at 500nm.

G. Antioxidant Activity

Brown algae Sargassum was shown a high antioxidant power in vitro due to having phenolic compounds. In fact, phlorotannins are the major phenolic compounds of brown algae with an antioxidant role.

1) Frab Reagent

A standard curve was created by adding the FRAP reagent to a range of Fe2+ solutions of known concentrations which allows the Fe2+ concentration of the samples to be calculated thereby determining "antioxidant capacity." The FRAP method was based on that of Benzie and Strain

The FRAB REAGENT is prepared for 900ul.each test tube contain 5ul of red and brown alage sample is mixed with 95ul of distilled water.900ul FRAB REAGENT is added to mixed sample and incubated at 592nm.The Reading are measured to the UV spectrophotometer.

2) H2O2 Reagent

Hydrogen peroxide (H2O2) is an essential oxygen metabolite and serves as a messenger in cellular signal pathways that are necessary for the growth, development and fitness of living organisms.

H2O2 reagent will be prepared in 1000ul.each test tube contain 5ul of red and brown alage sample is mixed with H2O2 reagent.Then mixed well .after,mixing the sample was incubated at 610 nm.Take reading in UV spectrophotometer

III. RESULTS AND DISSCUSSION

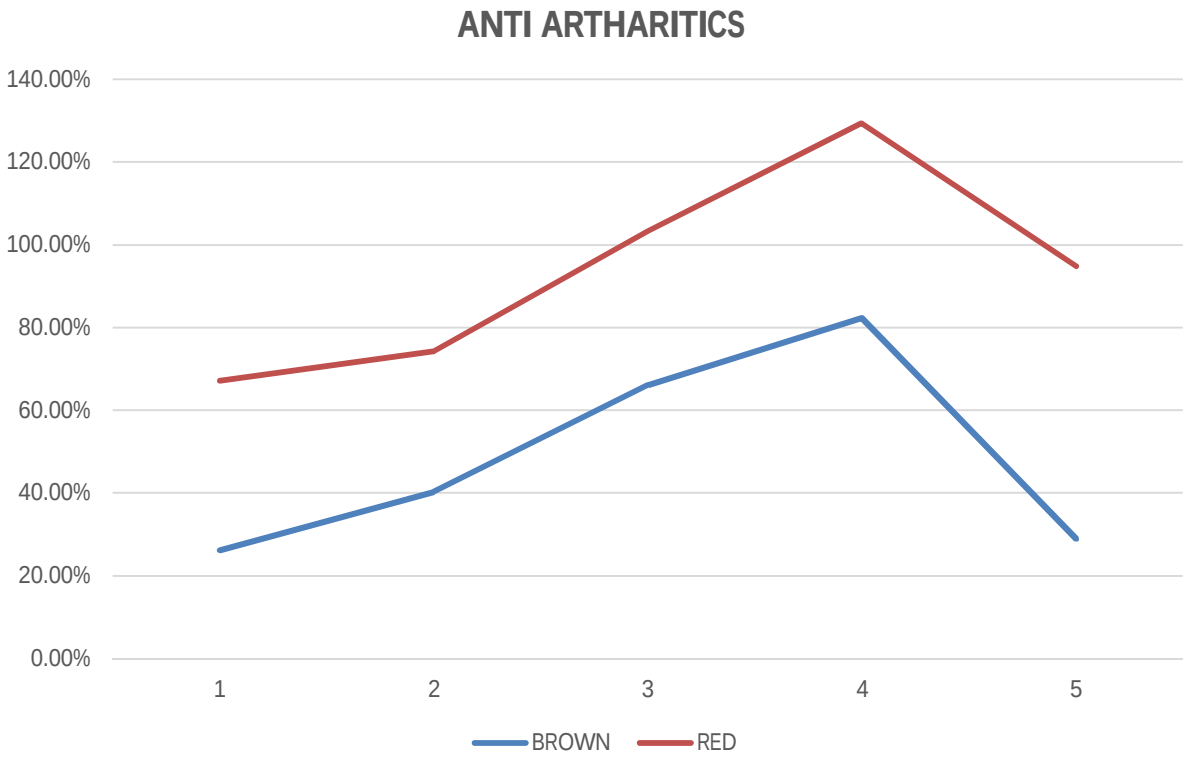
A. Bio Active Compound Analysis

From the extracted sample of *Sargassum wigtii*(Brown algae) and *Gracilaria corticata* (Red algae) the bioactive compounds were analyzed with the help of reagents and the results were analyzed. Positive symbol shows conformational presence and minus symbol shows conformational absence.

Bio active compound analysis	SARGASSUM WIGTII (brown)	GRACILARIA CORTICATA (red)
Alkaloids	++	++
Flavonoids	++	-
Phenol	+++	++
Tannins	+++	+
Glycosides	-	++
Phytosteriods	-	-
R.sugar	+++	++
Steriods	-	-
Saponins	+	-
Protein	++	-

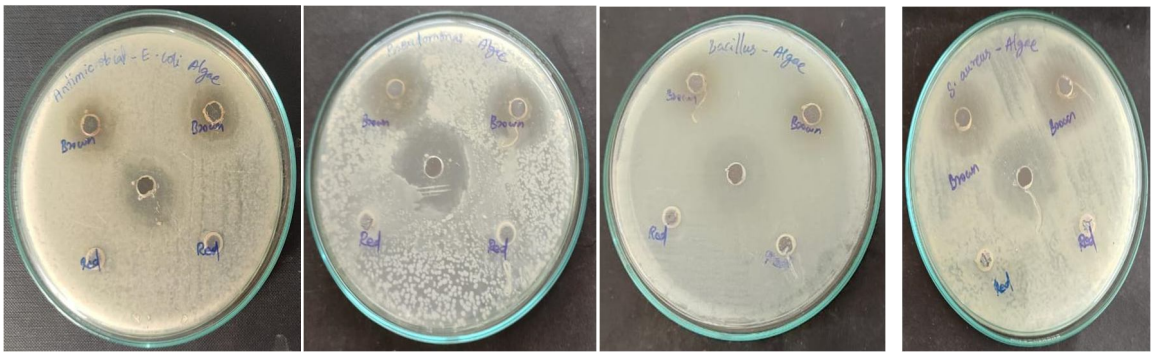
B. Anti Artharitics

Samples	Brown alage at 660nm	Red alage at 660nm
CONTROL	0.046	0.077
SAMPLE 1	0.104	0.394
SAMPLE 2	0.231	0.340
SAMPLE 3	0.350	0.337
SAMPLE 4	0.425	0.440
SAMPLE 5	0.179	0.585



C. Anti Microbial Activity

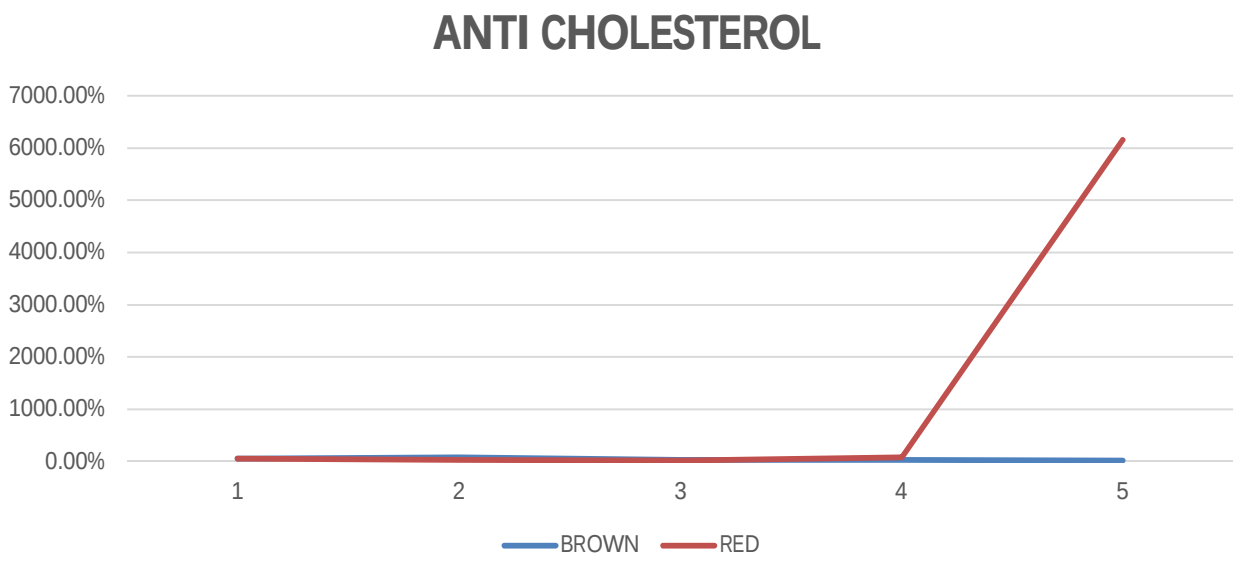
To determine the Anti Microbial Activity of red and brown algae sample Extraction in culture against BACILLUS,S.CEREUS,PSEUDOMONAS,E.COLI as shown in fig.,



Bacteria	Centre	Brown 1	Brown 2	Red 1	Red 2
Bacillus	2.4 cm	1.2cm	1.1cm	-	-
S.cereus	2.5cm	2.2cm	2.7cm	-	-
E coli	2cm	1.6cm	1.5cm	-	-
Pseudomonas	2.7cm	2.7cm	2.5cm	-	-

D. Anti Cholesterol

Brown algae	Red algae
49.6%	48.1%
79.1%	30.9%
26.1%	17.11%
30.8%	80 48%
14.26%	61.56%



E. Anti Oxidant Activity (Frab Reagent)

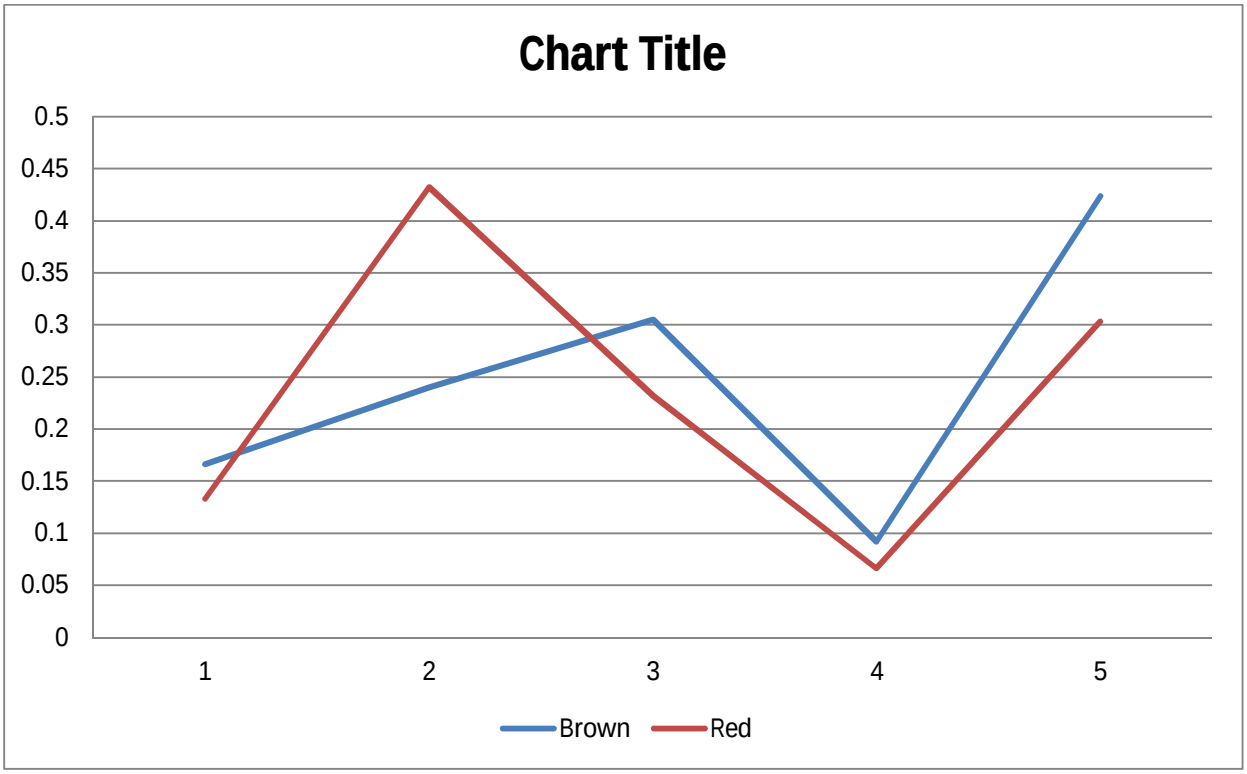
The concentration of antioxidant has a ferric- TPTZ reducing ability equivalent to that of 1 mmol/l FeSO4.7H2O. EC1 was calculated as the concentration of antioxidant giving an absorbance increase in the FRAP assay equivalent to the theoretical absorbance value of a 1 mmol/l concentration of Fe (II) solution determined using the corresponding regression equation.

Red alage	Brown alage
Control=0.606	Control=0.606
Sample 1=0.536	Sample 1=0.407
Sample 2=0=342	Sample 2=0.503
Sample 3=0.225	Sample 3=0.244
Sample 4=0.338	Sample 4=0.244
Sample 5=0=424	Sample 5=0.135

F. Anti-Oxidant Activity(H2O2 Reagent)

The hydrogen peroxide scavenging activity was measured absorbance was read at 230 nm. BHT was taken as a positive control and the reaction was carried out in triplicates. Percent inhibition of the assay was calculated.

Red alage	Brown alage
Control=0.503	Control=0.503
Sample 1=0.166	Sample 1=0.133
Sample 2=0.240	Sample 2=0.432
Sample 3=0.305	Sample 3=0.232
Sample 4=0.092	Sample 4=0.066
Sample 5=0.424	Sample 5=0.303



IV. CONCLUSION

Recent investigations have proven that secondary metabolites from natural resources containing bioactive components have a wide variety of biological properties. This study provides significant evidence about the biological activity of different extracts of Sargassum Wightii, Gracilaria Corticata. These results indicate that Sargassum Wightii, Gracilaria Corticata extract can be a good source for antioxidant, antimicrobial, and anticancer. Therefore, further studies to isolate and identify of bioactive compounds from Sargassum Wightii, Gracilaria Corticata extract for in vitro investigations of observed activities are highly recommended. In addition, it is necessary to elucidate the mechanisms of action of these extracts and bioactive compounds isolated from this plant at the cellular and molecular level to evaluate biological capacity of substances on specific therapeutic properties. This studies shows the comparative analysis between brown and red algae against various pharmacology studies, which shows that brown algae shows better results than red algae. Though this study is limited and further procedure will be carried in higher works brown algae exhibits positive outcomes

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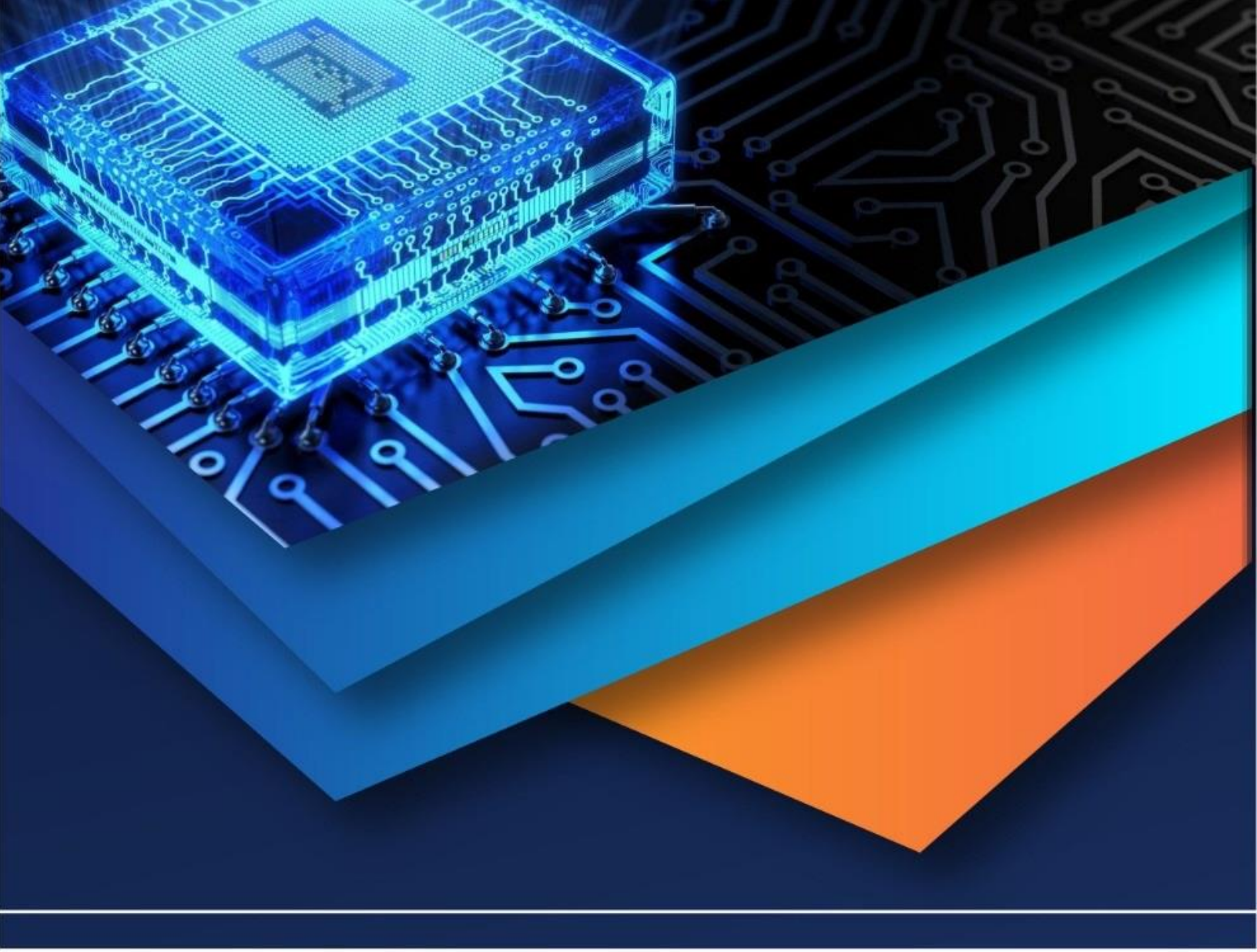

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