Departmental Achievement 1:

MICROBIOLOGISTS SOCIETY INDIA

CERTIFICATE

National Level

Article Writing and Publishing Competition (2021)

This to certify that **Mrs. J. Sridevi Jagavati** from **Indira Priyadarshni Govt. College, Hyderabad (Telangana)** has participated in Article Writing and Publishing Competition in regional languages for awareness of Covid-19 organized by Microbiologists Society India and received **First prize**.

(Dr. Meera D. Chavan)
Organizing secretary

(Dr. A. M. Deshmukh)
President

Departmental Achievement 2:

An article was published by student and faculty of dept. Of microbiology in Compendium of Research insights of life science students.

Compendium of "RESEARCH INSIGHTS OF LIFE SCIENCE STUDENTS" (ISBN: 978-93-91342- 27-2)
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'SWITCHING TO BIOFUELS'- A PROMISING ALTERNATIVE TO FOSSIL FUELS

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Any fuel that is derived from biomass is called as 'Biofuel'. The biomass includes plant or algae material or animal waste. Since such feed stock material can be replenished readily, biofuel is considered to be a source of renewable energy, unlike fossil fuels such as petroleum, coal, and natural gas. Thus, it can be a promising alternative fuel to fossil fuels. The reason to switch to biofuels is, the biofuels consumption and production ensures the natural carbon cycle to be 100 %. Continuous increase in concentrations of carbon dioxide and other vehicular gases in the atmosphere have the greatest effect on the environment and lead to global warming. Biofuels can decrease the threat of global warming. If we take the example, a crop of plants used to produce a barrel of fuel will absorb exactly the same amount of carbon dioxide as emitted from burning the barrel produced. Types of biofuels include first generation biofuels-bio alcohol, biodiesel, vegetable oil, biogas, syngas and solid biofuels, in which bio alcohol and biodiesel are of importance. Production of biodiesel, biogas and bioethanol from various feedstock, several kinds of wastes, biomass and agricultural residues, is ecologically viable and a sustainable option. The involvement of biofuel in worldwide transportation fuels seems to be revolving

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about blending percentage over the next decade. But many studies put forward that biofuel may share up to a one fourth of transport fuel supplies by 2050.

Globally consumption of energy has been almost doubled up in recent times and fossil fuels share more than 80 percent. As fossil fuel reservoirs are depleting fast, the exploitation of renewable resources for biofuel production is of utmost importance and may have lot of potential. Alternative cheap and environment friendly energy is the hot issue in today's world. Fossil fuels account for over 80.3% of the primary energy consumed in the world, and 57.7 % of that amount is used in the transport sector. The economics of biofuel is majorly determined by the value of the feedstock used for their production. For first-generation biofuel raw material price accounts approximately between 60 and 90% of the total production. The price competitiveness of biofuel to petroleum counterparts varies between countries and with the feedstock used. The "factory gate" price of Brazilian ethanol remained lesser than the "re-finery gate" price of gasoline in last decade. Both Brazilian and US ethanol remains expensive than gasoline on an energy equivalent basis. Sugarcane derived Brazilian ethanol is better competitive than US ethanol, but is still usually more expensive than gasoline. In case of biodiesel, it is more expensive than diesel, even though a liter of biodiesel provides around 14% less mileage than diesel.

Unlike petroleum, ethanol comes from renewable resources. It keeps cleaner burning characteristic as compared to gasoline; thus produces less greenhouse gases. Use of agro-industrial residues as raw material for ethanol fermentation, provides alternative substrates and also reduces carbon dioxide emissions with solution of their disposal problems. As ethanol is a biodegradable and comparatively highly soluble in water, has low toxicity risk. In case of any large spilling, far less danger for the environment than those associated with conventional oils. The potential of bioethanol production in totally non-aseptic environment makes the process easier to apply at industrial scale.

Advantages of using biofuels include biofuels like (bioethanol and biodiesel) can contribute to increased fuel efficiency, affordability, emissions, renewable, durability of engines like small engines found in mowers and chainsaws can use ethanol blends up to 10 % without problems, cars trucks can run on biodiesel. Nonetheless, there are some disadvantages of using biofuels which include production of carbon emissions certain studies have been conducted to analyse the carbon foot print of biofuels, and while may be cleaner to burn, there are strong indications that the process to produce the fuel including the machinery necessary to cultivate the crops and the plants to produce the fuel have hefty carbon emissions, food prices, food shortage, water use etc. Since traffic is one of the largest sources of

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greenhouse gas that is carbon emissions, substituting fossil fuels with renewable alternatives like biofuels is an efficient way to reduce these emissions. Hence, biofuels help to enhance and safeguard energy security by reducing the world's reliance on fossil energy sources such as bio fuels.

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Departmental Achievement 3:

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Applied Biosciences for Sustainable Development

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We express our sincere gratitude to **Mr/Ms/Dr. J. Sridevi,** Head, Dept of Microbiology, Indira Priyadarshini Govt. Degree College, for being the **Judge for Poster Presentations,** in the **International Conference "Applied Biosciences for Sustainable Development"** held on 3-4 September 2021 organized by Dept. of Microbiology & Biochemistry, St.Pious X Degree & PG College, Hyderabad, Telangana, India

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DEPARTMENTAL ACHIEVEMENT: 4

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OF RECOGNITION

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on being selected as

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during the academic session 2021-22

All the best for his / her future endeavors

Dr. A. M. Deshmukh
President
Microbiologists Society, India

Dr. Shilpa Jani
Project Coordinator
Best Student Award

State President

Ms. Thakur Preethi is awarded best student award from Microbiologists Society, India, for the academic year 2021-22