Blue Shell PRODUCTIONS

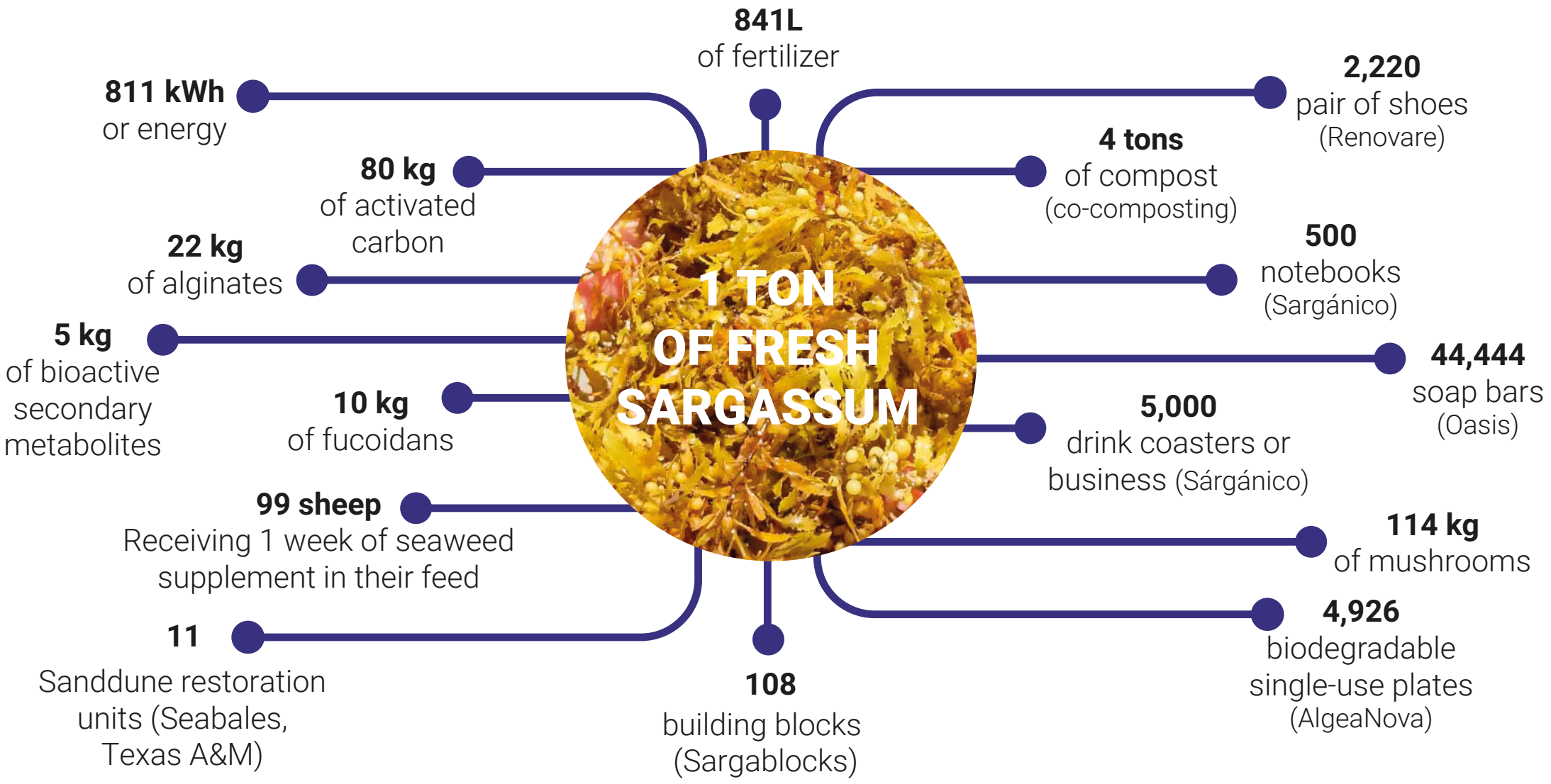
Sargassum Solutions: Existing and potential opportunities

Presented by: Dr. Shelly-Ann Cox

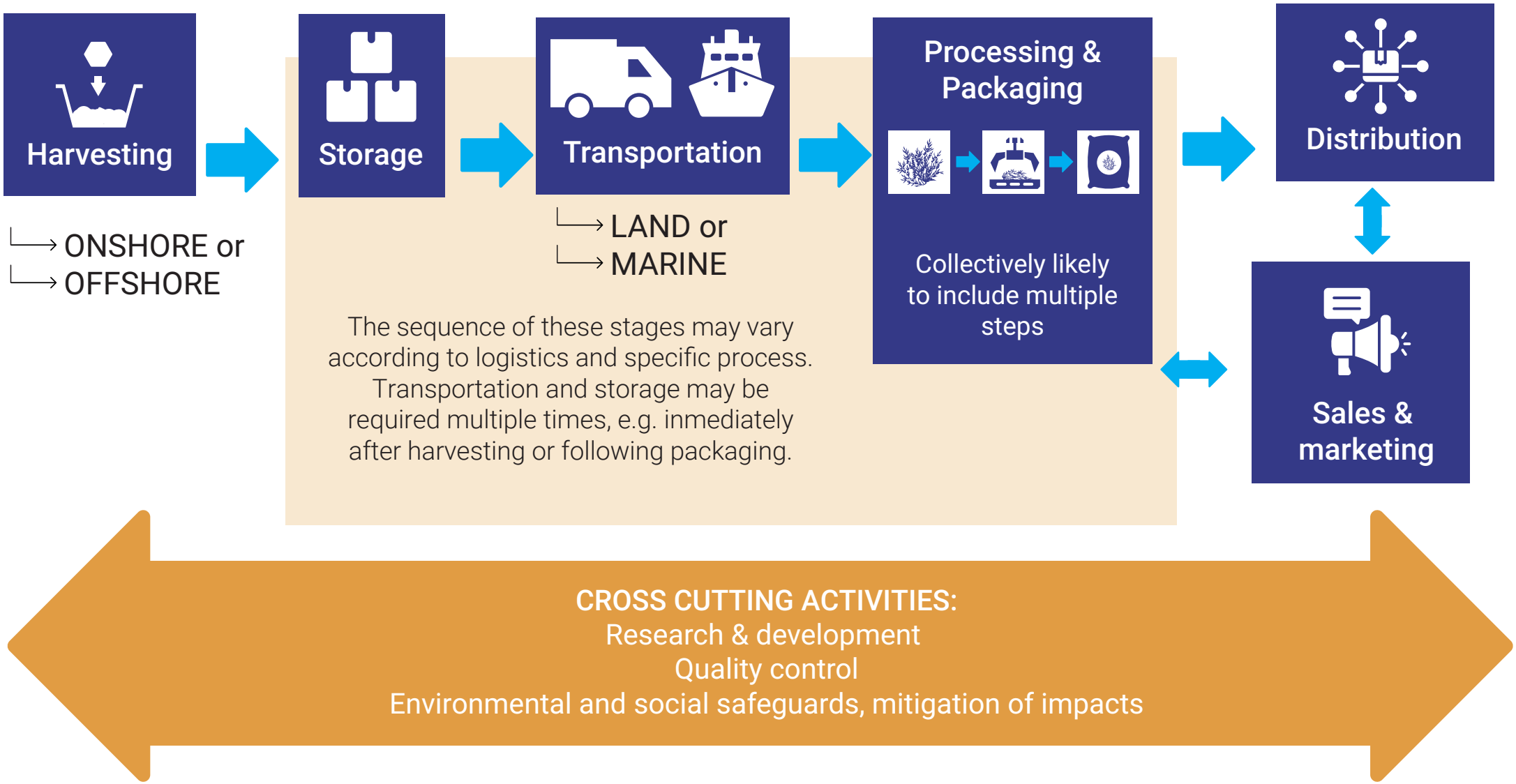
CHTA-CAST Sargassum Virtual Learning Series

15 September 2022

Sargassum Opportunities



Source: UNEP 2021 Sargassum White Paper. Adapted from (Desrochers et al. 2020: Sargassum Uses Guide)



Source: UNEP-CEP Sargassum White Paper 2021


THALASSO
Blue
Bio
Value
Acceleration
OCEANO AZUL foundation
CALOUSTE GULBENKIAN FOUNDATION
maze
BLUEBIO ALLIANCE
THALASSO


smo
SOLAR PROCESS

Cutting edge research in the Caribbean

Extracts from sargassum are being used to fight viruses

marine drugs

MDPI

Article

Effect of Fucoidan on the Mitochondrial Membrane Potential (ΔΨm) of Leukocytes from Patients with Active COVID-19 and Subjects That Recovered from SARS-CoV-2 Infection

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Abstract: Fucoidan is a polysaccharide obtaine
anti-viral, and immune-enhancing properties,
ment (complementary to prescribed medical th
determine the ex-vivo effects of treatment with
potential (ΔΨm, using a cationic cyanine dye,
human peripheral blood mononuclear cells (H
COVID-19 patients (C-19), and subjects that rece
infection). In addition, ex-vivo treatment with f
loss induced by carbonyl cyanide 3-chlorophen
healthy subjects (H) and recovered subjects at
infection). Data indicate that SARS-CoV-2 infe
after infection, however, fucoidan promotes rec
subjects. Therefore, fucoidan may be a potent
COVID-19, using mitochondria as a therapeuti

Keywords: fucoidan; SARS-CoV-2; mitochondr

1. Introduction

The coasts of the Caribbean Sea expe
become a problem for the recreational use
ever, the incidence of sargasso can be an
active metabolites such as fucoidans, whi
fucose found in brown seaweeds [2]; the m
450 species and is among the largest in trop

Recent researches on fucoidan have
such as anti-cancer, anti-coagulant, anti-c

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RESEARCH ARTICLE

Antiviral activity of *Sargassum fluitans* seaweed against echovirus 9, coxsackievirus A16 and coxsackievirus A24

Actividad antiviral del alga *Sargassum fluitans* (Børgesen) Børgesen 1914, frente al echovirus 9, el coxsackievirus A16 y el coxsackievirus A24

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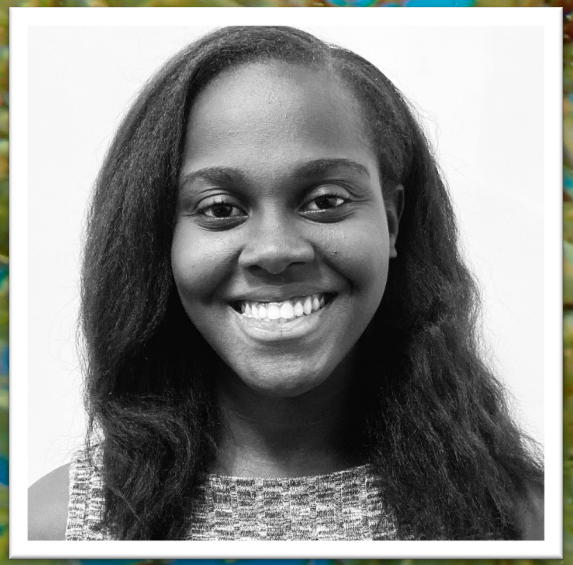
Abstract

Enteroviruses cause human diseases such as Mouth, Hand and Foot Syndrome, hemorrhagic conjunctivitis, aseptic meningitis, and viral meningoencephalitis. As yet, there is not specific therapy for most enteroviruses infections. The brown seaweeds of *Sargassum* genus synthesize a great variety of metabolites, which make them potential sources of compounds with antiviral activities. This study aimed to evaluate the *in vitro* antiviral activity of a hydro-alcoholic extract of *Sargassum fluitans* against three human enteroviruses: coxsackievirus A16, echovirus 9 and coxsackievirus A24. Cytotoxicity of the extract was evaluated in Vero, RD and Hep-2 cells by MTT method. Antiviral activity (EC_{50}) was assessed by cytopathic effect inhibition in cells. Extracellular virucidal activity and reduction of viral yield were determined by endpoint viral titration assay. The antiviral activity was characterized by a time of addition assay. The extract showed antiviral inhibitory activity against all tested viruses. The extract also exhibited a virucidal effect against E9 and CVA16 and reduced the formation of infective particles in the cells in more than three logs. The extract was able to inhibit earlier and late stages in the enterovirus replication cycle. In conclusion, the present study demonstrated the effective *in vitro* antiviral activity of the brown seaweed *Sargassum fluitans* against clinically relevant enteroviruses, supporting their use as potential source of antiviral compounds.

Keywords: *Sargassum fluitans*, antiviral, enterovirus, echovirus, coxsackievirus

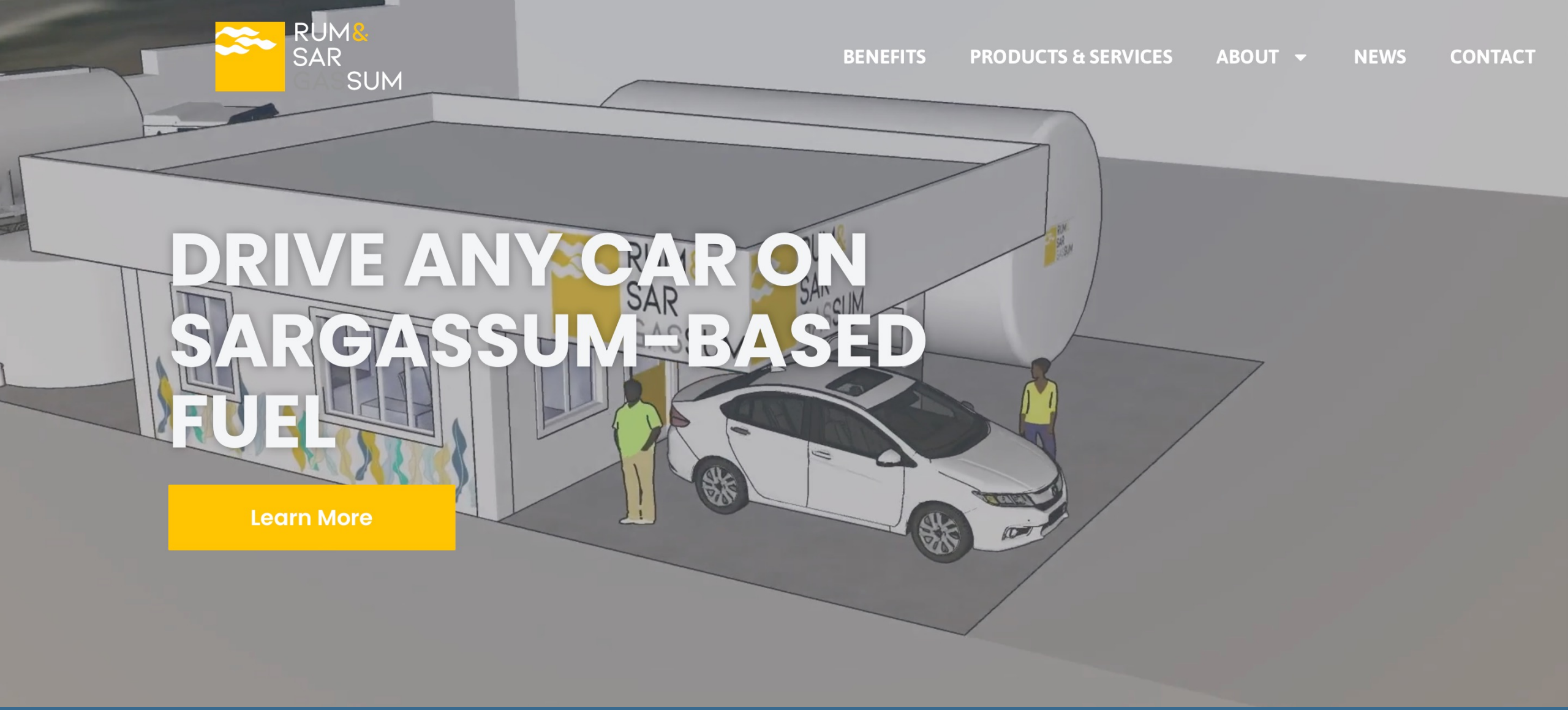
Resumen

Los enterovirus causan enfermedades humanas tales como el Síndrome de Mano, Pie y Boca, la conjuntivitis hemorrágica y la meningoencefalitis viral. Hasta el momento no existe una terapia específica para la mayoría de las infecciones por enterovirus. Las algas pardas del género *Sargassum* sintetizan una gran variedad de metabolitos, los cuales les convierten en fuentes potenciales de compuestos con actividad antiviral. Este estudio tuvo como objetivo evaluar la actividad antiviral *in vitro* de un extracto hidroalcohólico de *Sargassum fluitans* contra tres enterovirus humanos: coxsackievirus A16, echovirus 9 and coxsackievirus A24.



Barbadian Innovator Kerri-Ann Bovell is developing a bioplastic packaging alternative made from sargassum seaweed and starch sourced from local food waste. Her start-up EcoMycö was also selected in the Bloom Barbados Cleantech Cluster.

Oasis Laboratory is Home of the world's 1st Sargassum Skin Care Line - OCEAN by OASIS. This sustainable innovation-based company was established in 2018 by two renowned Barbadian Chemists and budding entrepreneurs Kemar Codrington and Mikhail Eversley.



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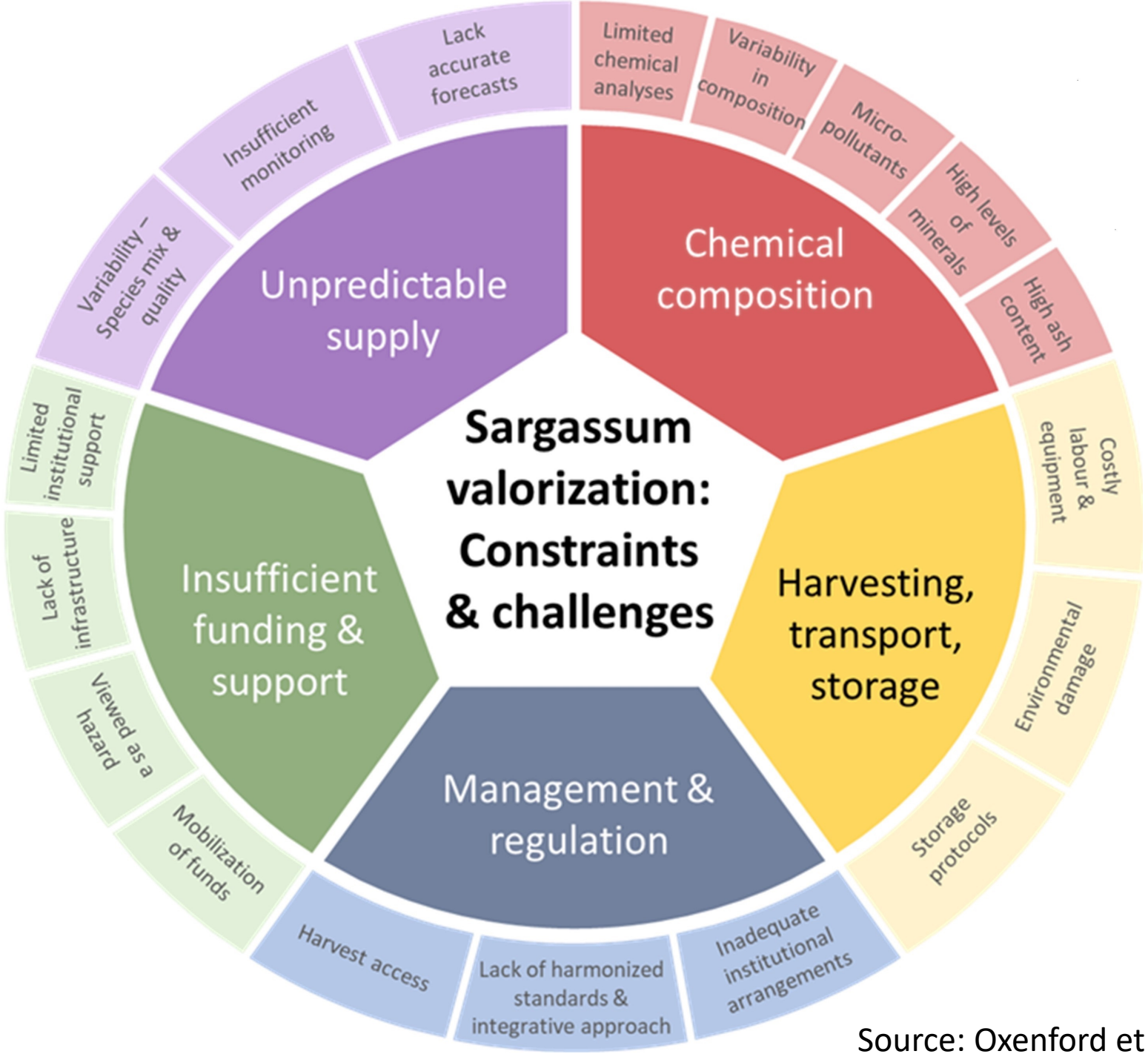

Source: Oxenford et al. 2021

1

NON-FUNGIBLE TOKENS

Creatives producing sargassum related art should consider the use of Non-fungible Tokens (NFTs)

2

BLUE BLOCKCHAIN

Blockchain powered blue carbon credit trading platforms can be considered in the future

3

TECH STARTUP COLLABORATIONS

Sargassum innovators should explore collaborations with tech startups in the region

Thank You!

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