

Phytochemical studies of selected South African medicinal plants



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Galinea africana

of the Aizoaceae family

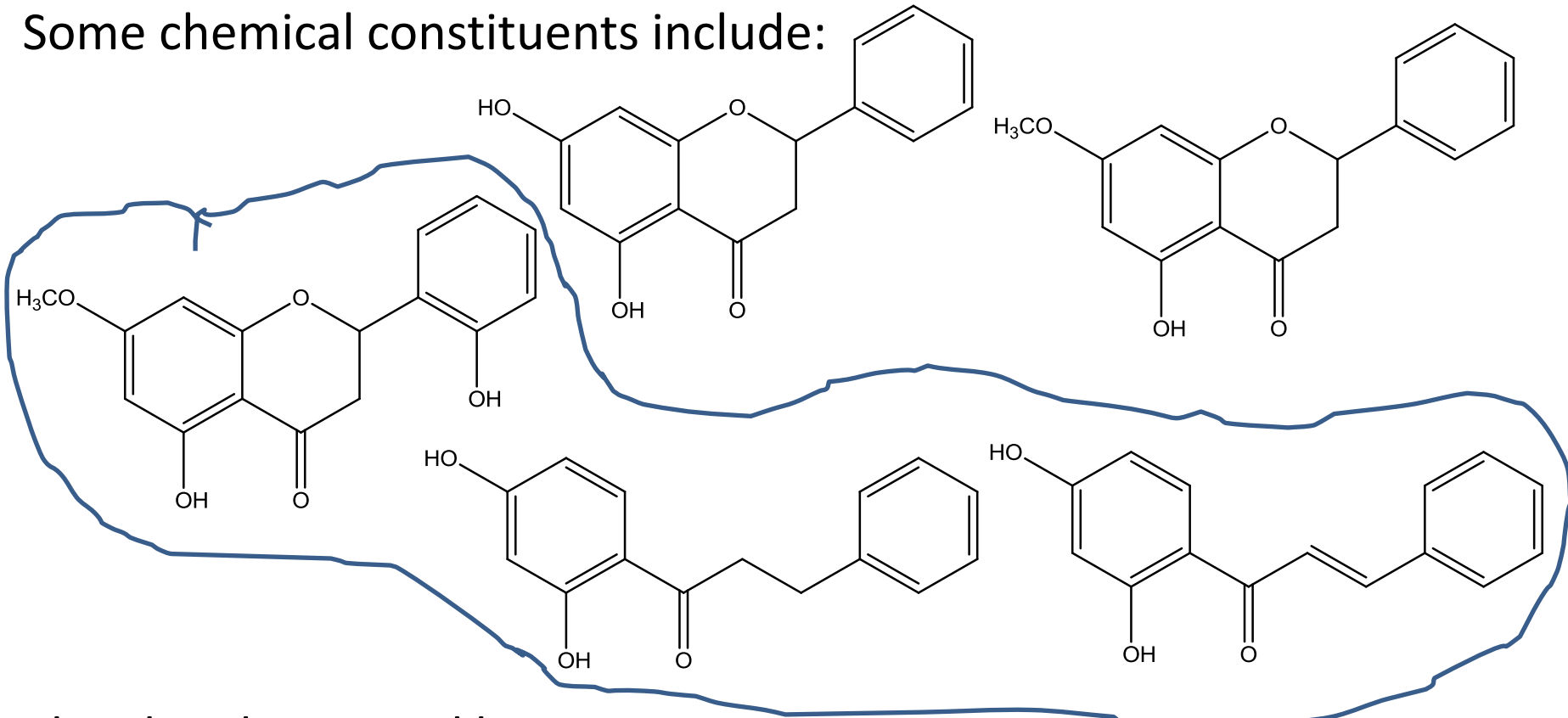
- A dominant plant in Namaqualand.
- Commonly known as “kraalbos” or “geelbos”.
- Decoction used as a lotion for wounds.
- Chewed for relief of toothache.
- Treatment of venereal and skin diseases.
- Relief of inflammation of the eyes.

Toxicity to some livestock, during scarcity of suitable grazing foliage

Galinea Africana, ethanol extract

Has antimicrobial activity against 14 fungal species, including *Fusarium equiseti*, *F. graminearum*, *F. verticillioides* and *Phaeomoniella chlamydospora*, as the most sensitive.

Some chemical constituents include:



Plus the phytosterol lupeone

Galinea africana

- Is currently being developed as an environmentally-friendly [organic] pesticide (biopesticide) as opposed to synthetic pesticides which are not biodegradable & therefore pollute the environment.
- With potential application in the apple industry where produce levels may be compromised by fungal infection
- Been also shown to boost the natural resistance of crop plants to adverse elements

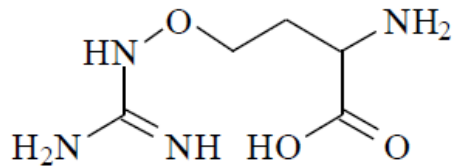
Sutherlandia(Lessertia) frutescens

- Treatment of a multitude of health problems, such as respiratory, cardiovascular, gastrointestinal, nervous, urinary, musculoskeletal, endocrine and immune systems & many others. In fact, it may be considered as a multipurpose kind of herbal medication, including such conditions as cancer, diabetes and HIV-AIDS
- *in vitro* and *in vivo* studies have shown anti-diabetic, anti-proliferative, anti-inflammatory, antibacterial, anti-HIV, analgesic, anticonvulsant and antithrombotic activities

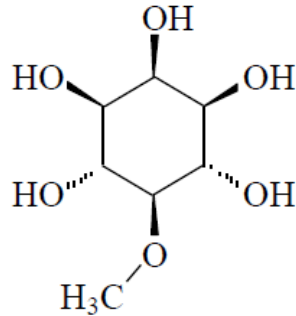


Sutherlandia(Lessertia) frutescens

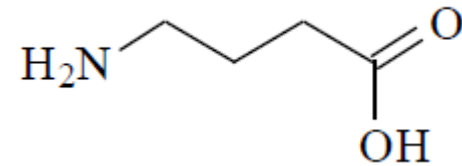
Initial perceptions about the chemistry:-



L-canavanine
(anti-cancer)



pinitol
(anti-diabetic)



γ-amino butyric acid
(CNS- active, anti-anxiety)

But not enough to explain all the other health benefits!

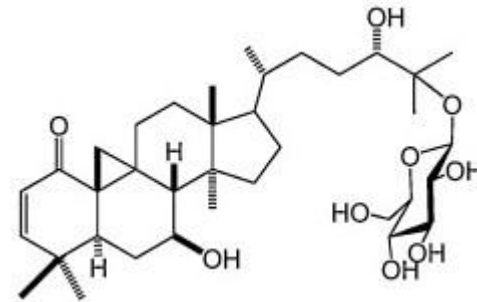
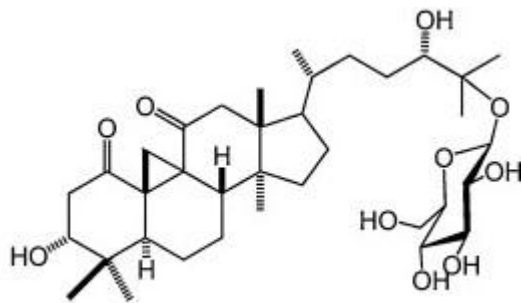
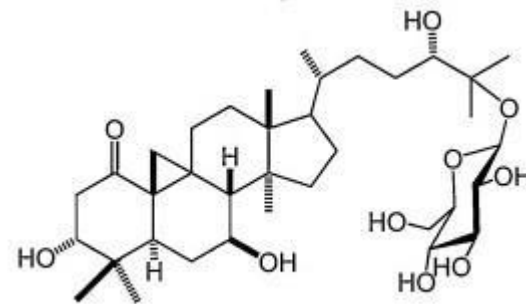
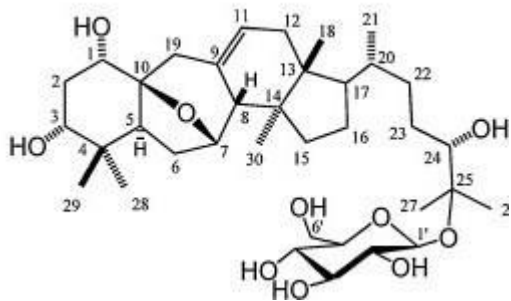
And especially w.r.t.HIV-AIDs !!

Hence the need for further scientific studies, chemistry, biology, pharmacology, biochemistry, clinical, etc

Observational studies had shown that infusions prepared from the aerial parts of the plant are effective in alleviating HIV-AIDS symptoms

Sutherlandia(Lessertia) frutescens

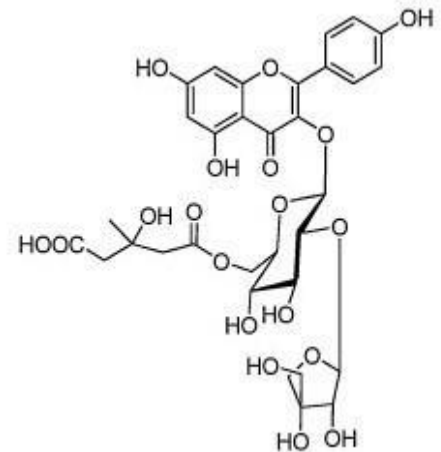
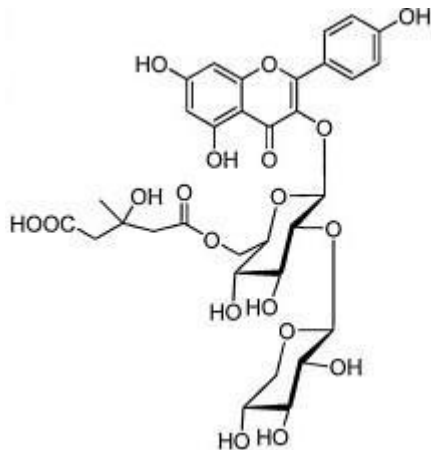
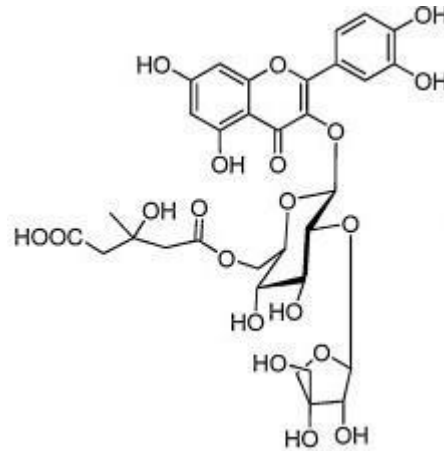
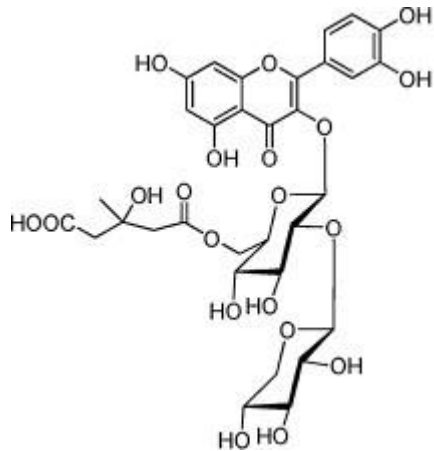
More compounds were isolated:- (sutherlandiosides A-D)



With sutherlandioside B being the most abundant!

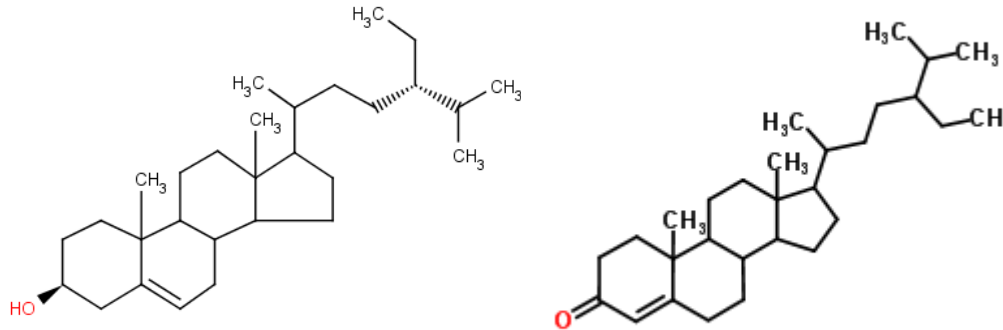
Sutherlandia(Lessertia) frutescens

- More:- (sutherlandins)



Sutherlandia(Lessertia) frutescens

Others:



palmitic acid & immune-modulating polysaccharides.

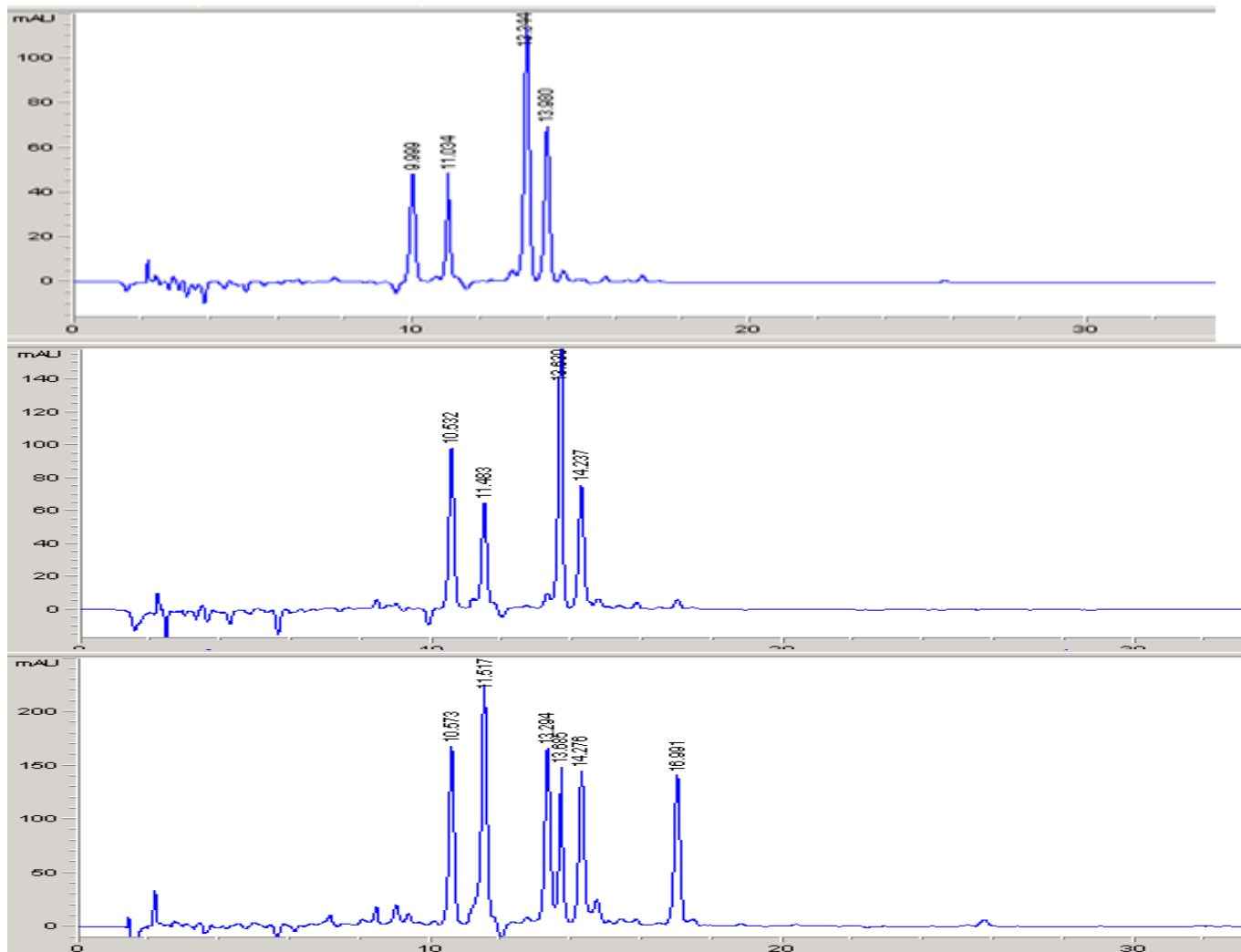
To date: more than 60 scientific publications since 2004!!

2007: A randomized, double-blind, placebo-controlled trial of *Lessertia frutescens* in healthy adults revealed that it is safe for human consumption.

2015: Another clinical study showed that *S. frutescens* at doses of up to 2,400 mg daily does not cause significant adverse effects in HIV seropositive adults.

Different commercial Sutherlandia products

Sutherlandins profile as analyzed by HPLC



Cissampelos capensis

Of the Menispermaceae family

Some traditional uses:-

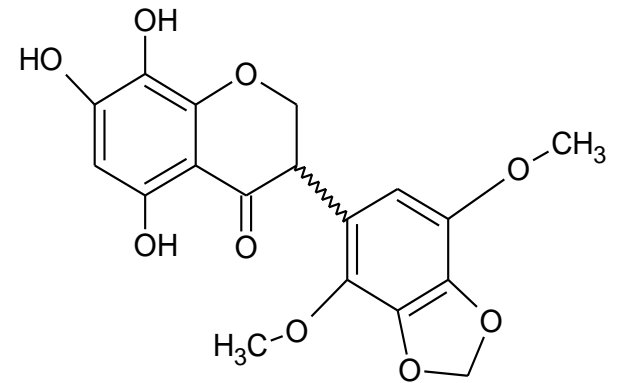
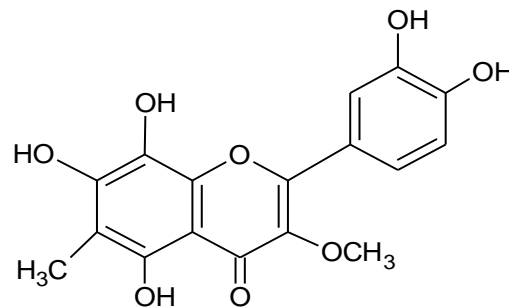
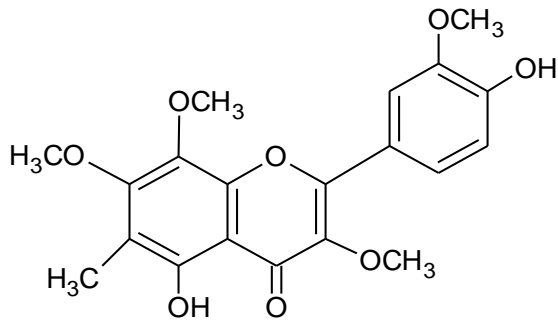
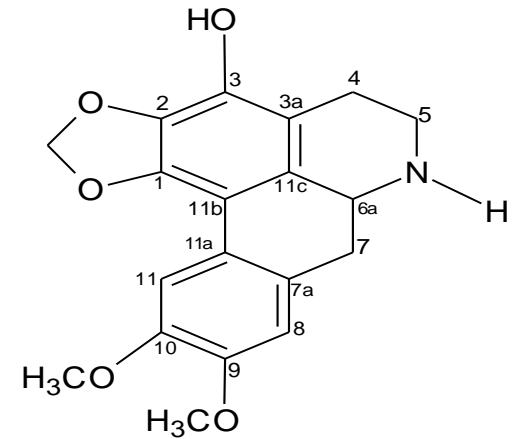
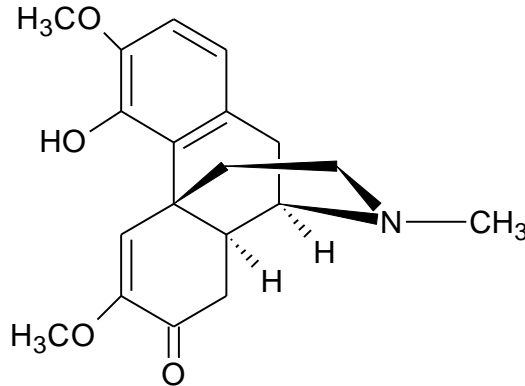
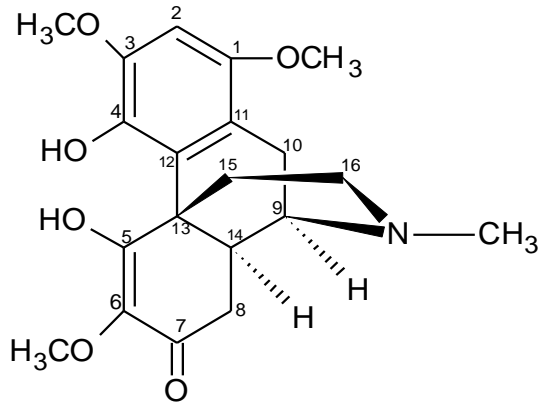
Menstrual problems, dysentery, cholera, appetite stimulant, prevention of miscarriage, blood purification, measles, cholera, snakebite, tuberculosis, influenza, stomach and skin cancers, diabetes, etc.

Some known biological activities:-

anti-inflammatory, smooth muscle relaxant, antispasmodic

Cissampelos capensis

- Some phytochemical constituents:-



The aporphines and the isoflavone being the most biologically active, in antimicrobial & cytotoxicity assays

Ecklonia maxima

A brown seaweed, rich in phlorotannins, a class of compounds with broad therapeutic properties from anti-inflammatory activities, to radical scavenging activity, anti-cancer, anti-allergic activity, anti-plasmin activity, antibacterial activity, HIV-1 reverse transcriptase and protease inhibition activity, acetyl cholinesterase inhibitory activity, and tyrosinase inhibitory activity.

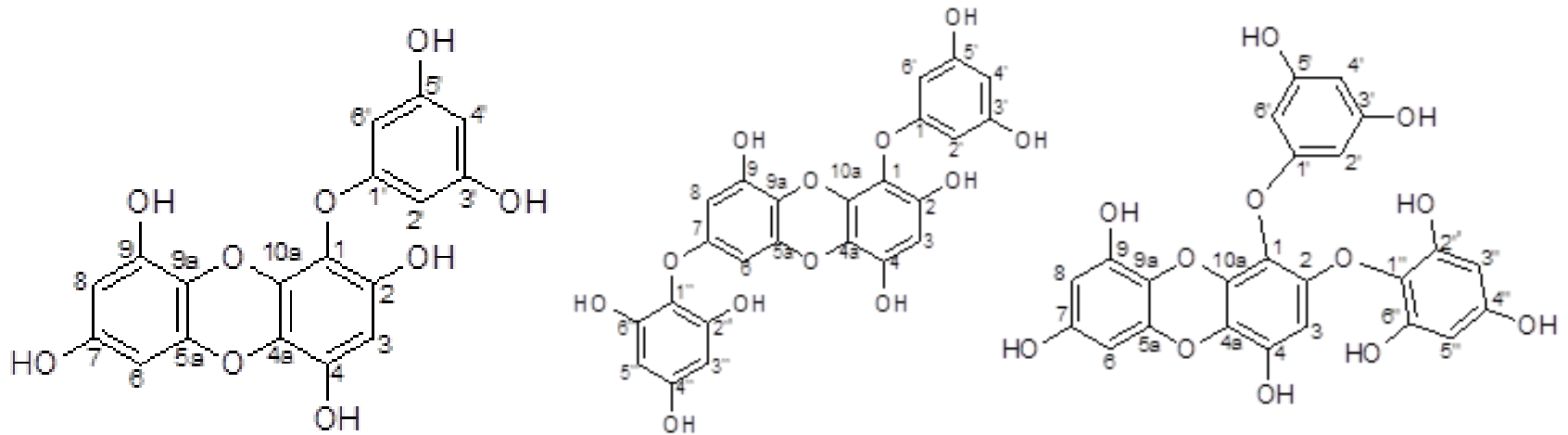
Used as a raw material for pharmaceutical products such as:-

1. An anti-inflammatory skin ointment
2. A weight loss/anti-obesity capsules

Ecklonia maxima

Some chemistry includes:-

Phloroglucinol oligomers



Where the trimer showed the highest anti-proliferation results against HeLa, H157 and MCF7 cancer cells, while the first tetramer showed the highest radical scavenging activity!

Acknowledgements

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