

ROOIBOS: IMPROVES GUT HEALTH!!

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For the next few minutes....

- **Background**
- **Challenges**
- **Research and Results**
- **Summary**



Image: Rooibos (*Aspalathus linearis*)

ABOUT ROOIBOS

What makes Rooibos so special?



Rooibos (*Aspalathus linearis*)



**Western cape,
Cederberg region**



Geographical Indicator Status

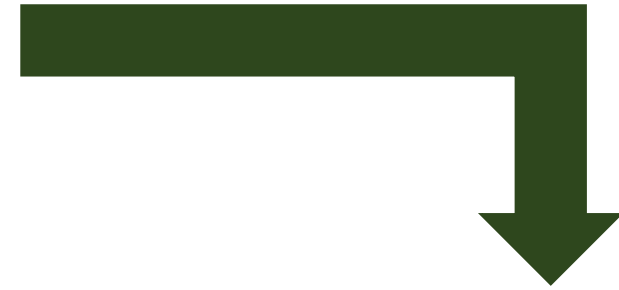
ROOIBOS PROCESSING



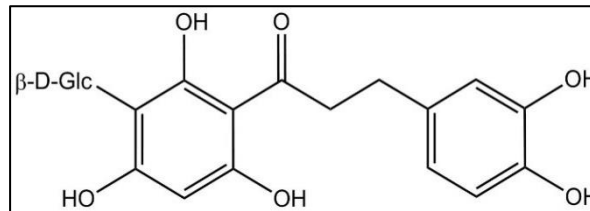
ROOIBOS PLANT



RED ROOIBOS



GREEN ROOIBOS



**ASPALATHIN
(UNIQUE TO ROOIBOS)**



PROPERTIES

ANTI-INFLAMMATORY

WEIGHT LOSS

ANTIOXIDANTS



USES

COSMETICS

PET SUPPLEMENTS

HEALTHY BEVERAGES

CHALLENGES

ENVIROMENTAL CHALLENGES



HEALTH CHALLENGES



NSAID: Non-steroid anti-inflammatory drugs

**LONG TERM USE OF NSAID =
BAD SIDE EFFECTS**

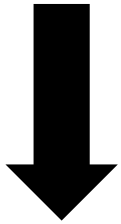


LOW BIOAVAILABILITY = LOW ABSORPTION

LOW ABSORPTION = LIMITED BENEFITS

RESEARCH AND RESULTS

**EFFECTS OF GREEN
AND RED TEA**



**BARRIER
RESTORING
EFFECT**

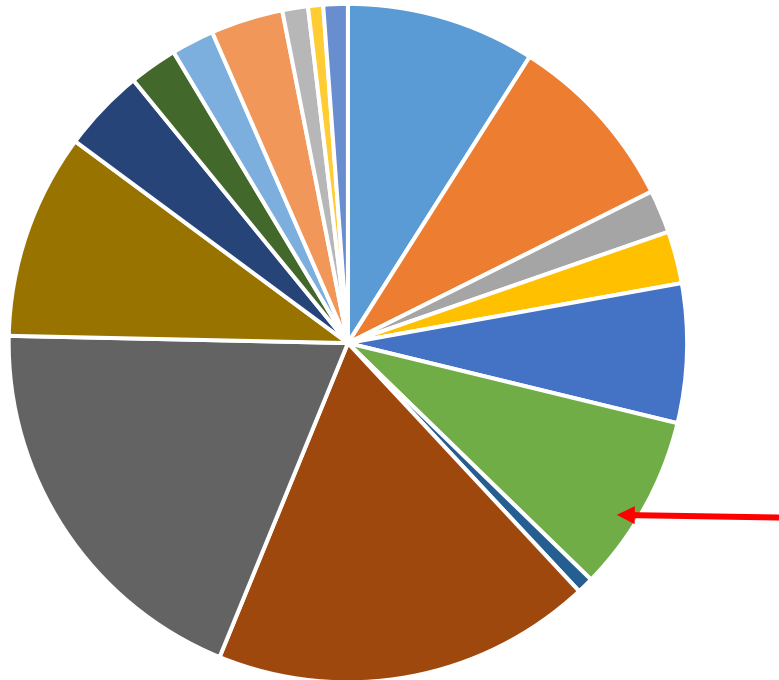


**NANOTECHNOLOGY AS
A DRUG DELIVERY**



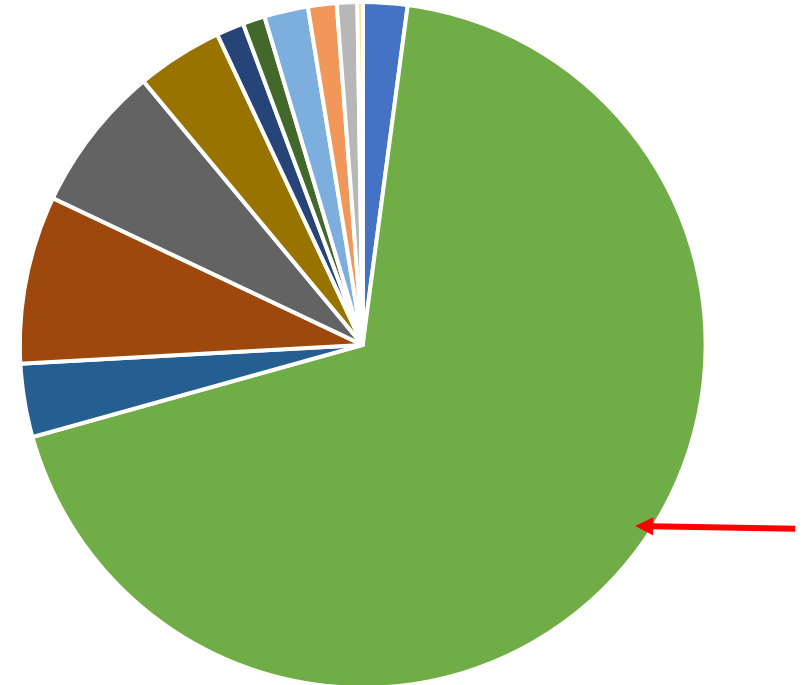
**PROPHYLAXIS/
PRE-TREATMENT**

Red Rooibos extract



- | | | |
|-----------------------|-----------------------|-----------------------|
| ■ S-Eriodictyol-6-glc | ■ R-Eriodictyol-6-glc | ■ S-Eriodictyol-8-glc |
| ■ R-Eriodictyol-8-glc | ■ PPAG | ■ Aspalathin |
| ■ Nothofagin | ■ Isoorientin | ■ Orientin |
| ■ Bioquercetin | ■ Vitexin | ■ Hyperoside |
| ■ Rutin | ■ Isovitexin | ■ Isoquercitrin |
| ■ Luteoloside | ■ Ferulic acid | |

Green Rooibos extract



- | | | |
|-----------------------|-----------------------|-----------------------|
| ■ S-Eriodictyol-6-glc | ■ R-Eriodictyol-6-glc | ■ S-Eriodictyol-8-glc |
| ■ R-Eriodictyol-8-glc | ■ PPAG | ■ Aspalathin |
| ■ Nothofagin | ■ Isoorientin | ■ Orientin |
| ■ Bioquercetin | ■ Vitexin | ■ Hyperoside |
| ■ Rutin | ■ Isovitexin | ■ Isoquercitrin |
| ■ Luteoloside | ■ Ferulic acid | |

ANTIOXIDANT CAPABILITIES

Key findings:

Green Rooibos are richer in antioxidants and displayed better antioxidant capabilities.

Table 1: Antioxidant activity of red and green rooibos tea.

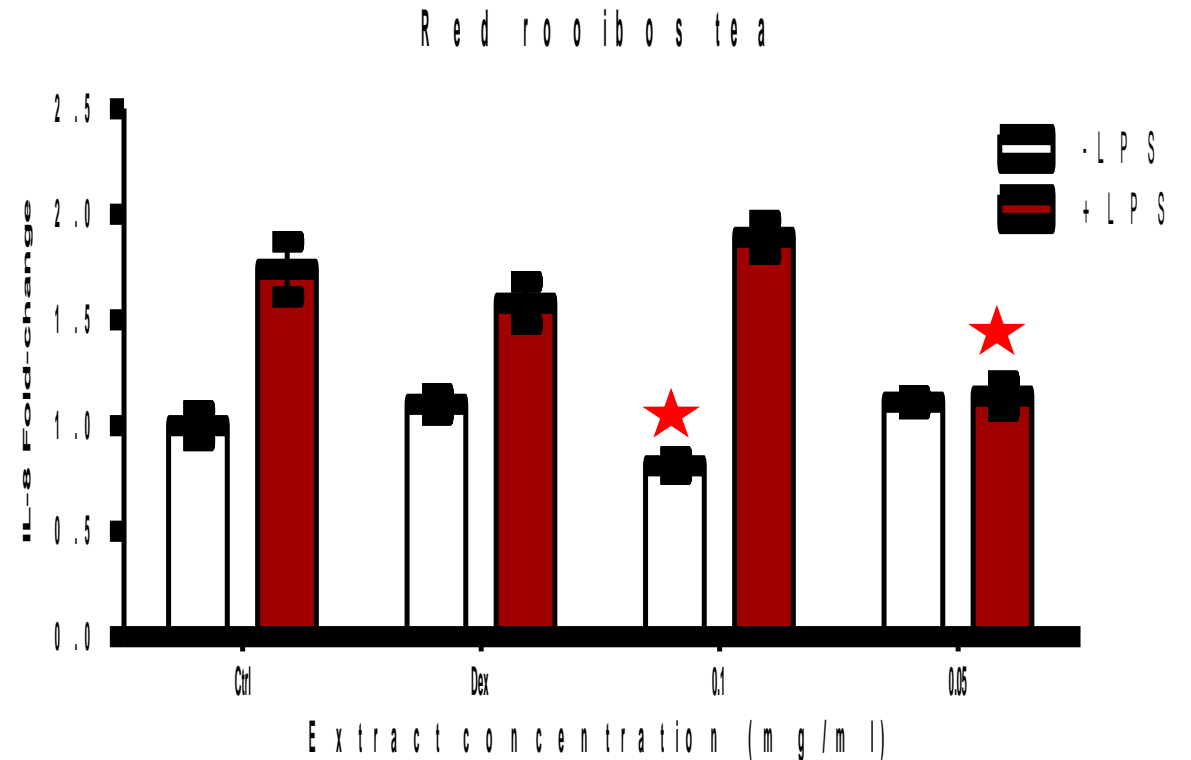
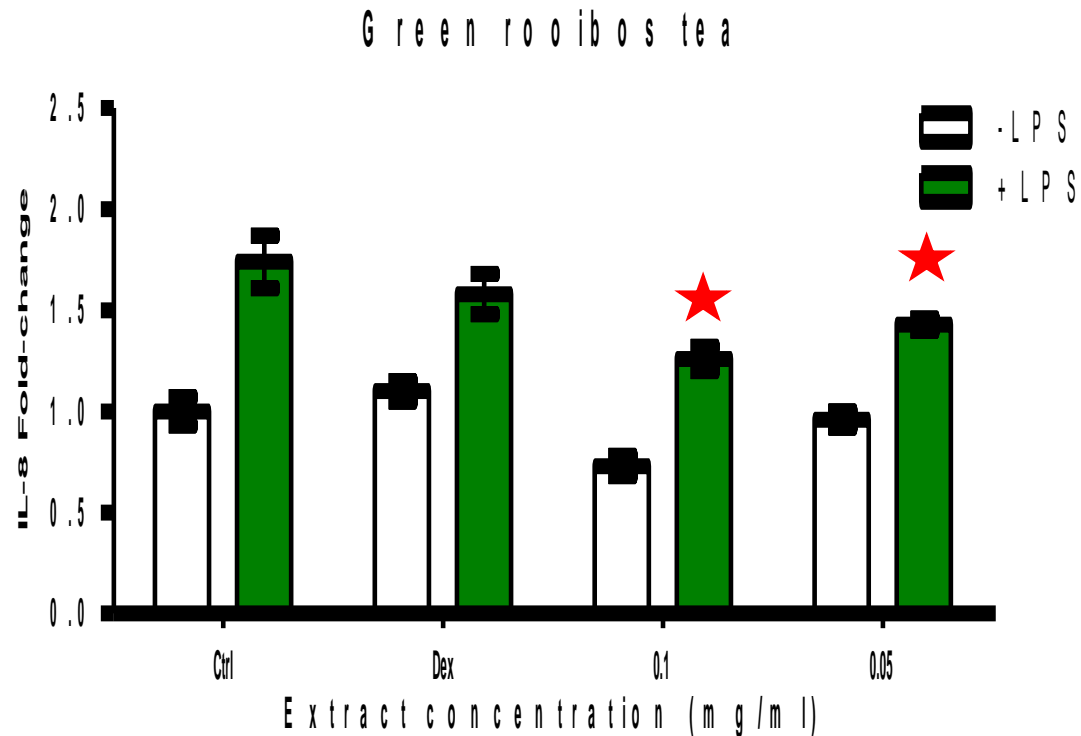
<i>Various antioxidant tests</i>	<i>Aqueous extract</i>	
	Green	Red
ABTS $\mu\text{mol TE/g}$	57%	43%
DPPH $\mu\text{mol TE/g}$	61%	39%
FRAP $\mu\text{mol AAE/g}$	57%	43%
ORAC $\mu\text{mol TE/g}$	60%	40%

ROOIBOS EFFECTS ON INFLAMMATION

Key findings:

Green Rooibos decreases inflammation at 0.1 and 0.05 mg/ml.

Red Rooibos decreased inflammation at 0.05 mg/ml.

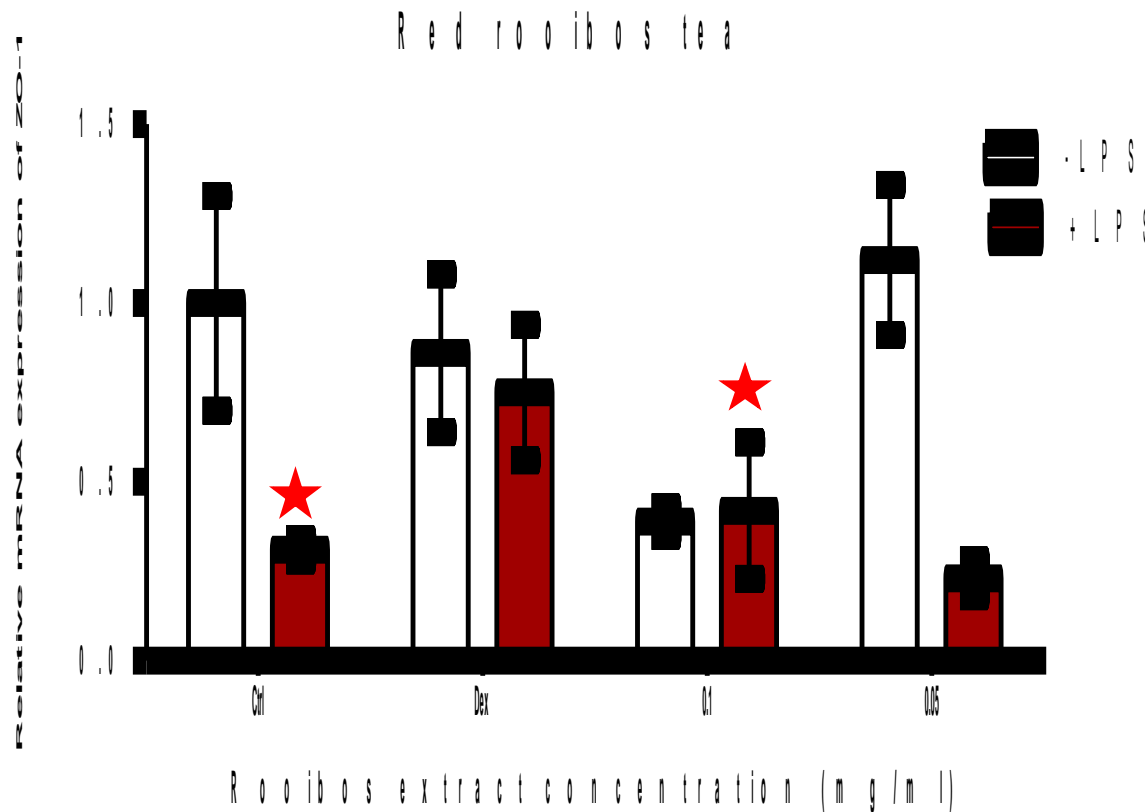
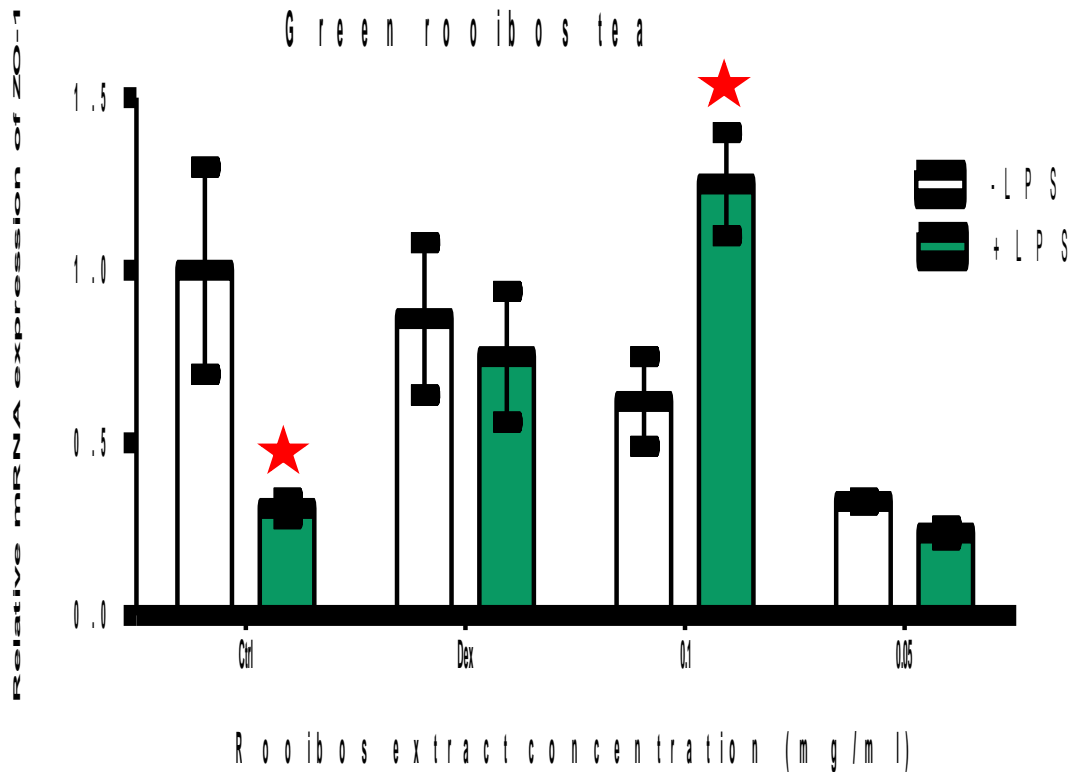


ROOIBOS EFFECTS ON BARRIER INTEGRITY ZO-1 gene

Key findings:

Green Rooibos strengthened the barrier integrity.

Red Rooibos slightly increased barrier integrity at 0.1 mg/ml and showed good increase at 0.05 mg/ml without inflammation.

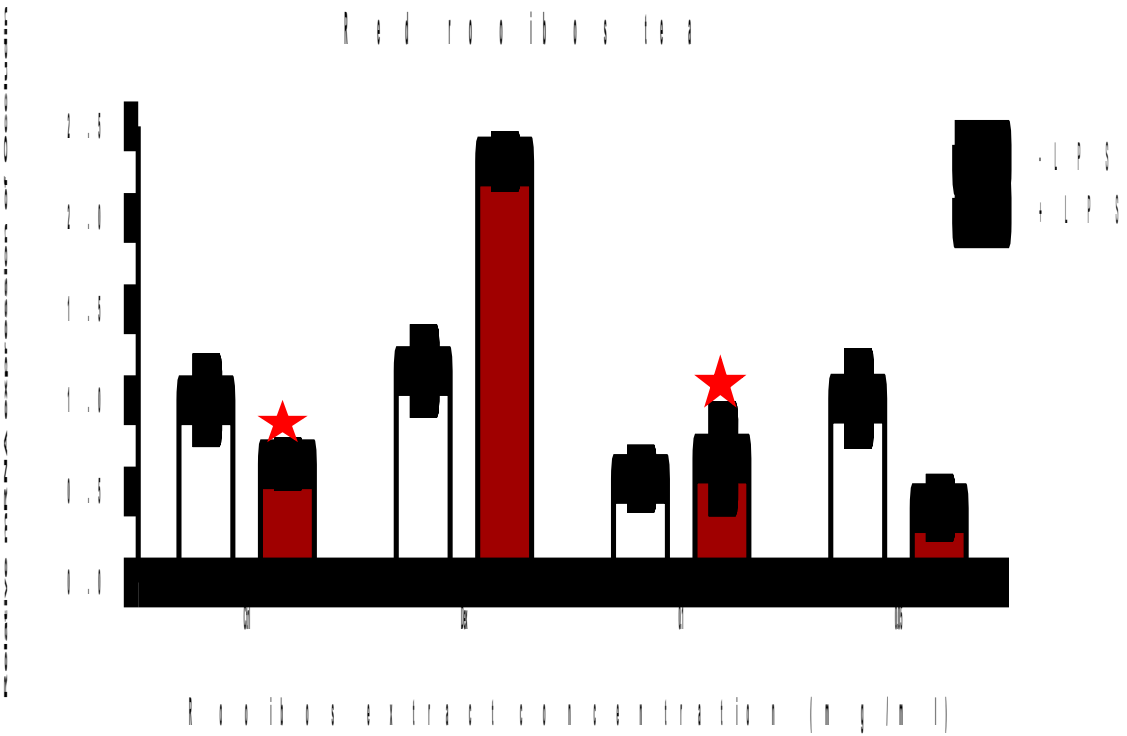
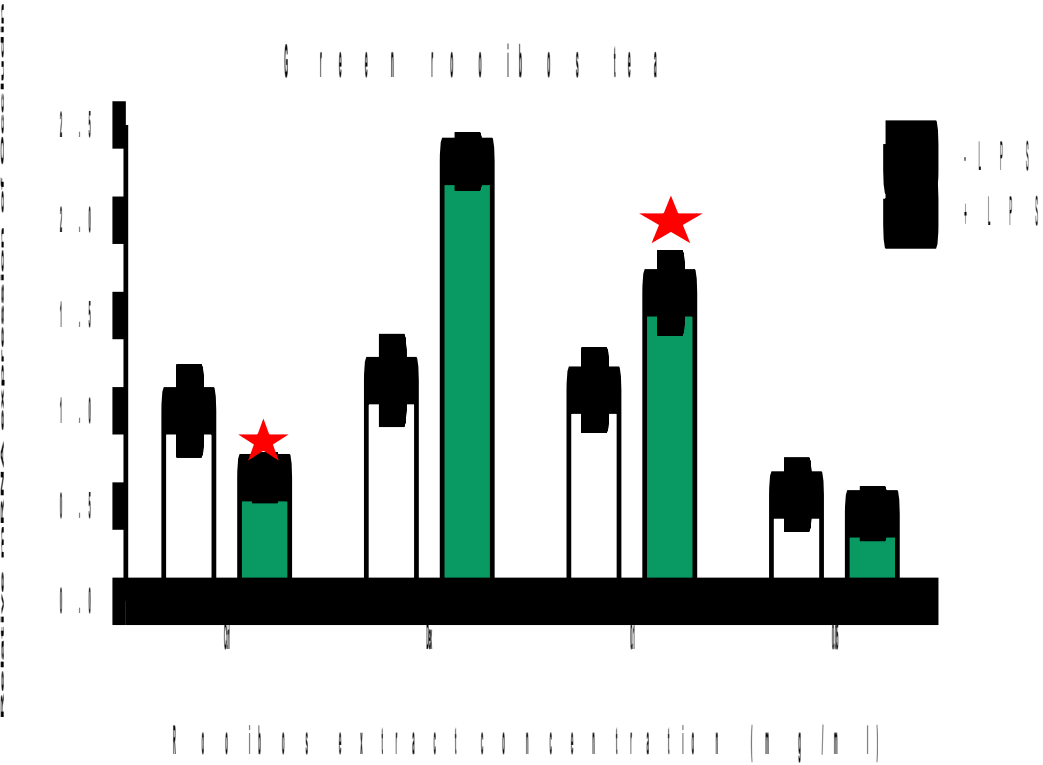


ROOIBOS EFFECTS ON BARRIER INTEGRITY OCCLUDIN gene

Key findings:

Green Rooibos strengthened the barrier integrity.

Red Rooibos slightly increased barrier integrity at 0.1 mg/ml and showed good increase at 0.05 mg/ml without inflammation.



THE TAKEAWAY!!

1. IS THERE A DIFFERENCE BETWEEN GREEN AND RED ROOIBOS?

YES!!

2. CAN PRE-TREATING WITH ROOIBOS HAVE HEALTH BENEFITS?

YES!! BOTH ANTI-INFLAMMATORY AND BARRIER RESTORING PROPERTIES

3. WHATS THE NEXT STEP?

USING NANOTECHNOLOGY (1-100nm) TO REVOLUTIONIZE ROOIBOS

4. RELEVANCE AND OUTCOMES?

THANK YOU!!



Image credit: SA Rooibos Council

ANY QUESTIONS?



Additional Information

- NSAIDs (nonsteroidal anti-inflammatory drugs) can reduce pain, fever and other types of inflammation. Common over-the-counter NSAIDs include **aspirin, ibuprofen and naproxen sodium**
- **Dexamethasone:** Relieves inflammation (swelling, heat, redness, and pain) and is used to treat certain forms of arthritis; skin, blood, kidney, eye, thyroid, and intestinal disorders (e.g., colitis); severe allergies; and asthma.

Table 1: Various flavonoids detected in the aqueous fermented and unfermented tea extracts by high-performance liquid chromatography.

Compounds	Aqueous Fermented	Aqueous Unfermented
(g compound/100 g SS)		
S-Eriodictyol-6-gic	0.484	nd
R-Eriodictyol-6-gic	0.464	nd
S-Eriodictyol-8-gic	0.110	nd
R-Eriodictyol-8-gic	0.134	nd
Aspalathin	0.456	14.212
Nothofagin	0.042	0.716
Isoorientin	0.974	1.640
Orientin	1.031	1.434
Bioquercetin	0.527	0.843
Vitexin	0.213	0.269
Hyperoside	0.124	0.217
Rutin	0.110	0.428
Isovitexin	0.185	0.280

Antioxidant Tests:

ABTS- (2,2'-azino-bis (3-ethylbenzothiazoline-6-sulfonic acid).

DPPH- (2,2-diphenyl-1-picryl-hydrazyl-hydrate).

FRAP- Ferric Reducing Antioxidant Power.

ORAC- Oxygen Radical Absorbance Capacity.

Table 1: Antioxidant activity of red and green rooibos tea.

	Aqueous extract	
	Unfermented	Fermented
ABTS $\mu\text{mol TE/g}$	1903.9 \pm 18.7	1409.1 \pm 49.75
DPPH $\mu\text{mol TE/}$	1336.3 \pm 11.9	863.54 \pm 34.02
FRAP $\mu\text{mol AAE/g}$	1681.9 \pm 16.9	1257.3 \pm 17.46
ORAC $\mu\text{mol TE/g}$	8292.4 \pm 239.1	5557.8 \pm 275.6