Highlights from ten years of investing in Rooibos research

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STRIVING FOR A CANCER SMART SOUTH AFRICA
Why Invest in Rooibos research at MRC PROMEC Unit?
Cancers are caused by carcinogens

Carcinogens attack DNA
Prevent cancer outside and inside cells

Cancer preventive

Anti-carcinogen

carcinogen

STRIVING FOR A CANCER SMART SOUTH AFRICA
6 Reasons for investing in Rooibos research at PROMEC


2. International recommendation that we eat 5 or more servings a day of a variety of vegetables and fruits in order to prevent various cancers. However, few achieve this. Rooibos is a plant and contains molecules also found in vegetables. Rooibos could possibly contribute to cancer prevention.

3. Rooibos is a unique, South African, herbal plant and has been used by millions for decades as is generally regarded as safe.

4. Rooibos is under-researched with only about one publication per year.

5. Rooibos is a relatively cheap product and available to most.

6. PROMEC – excellent research facility
Highlights of Rooibos research (1)

Number of peer-reviewed publications listed in Pubmed per annum has increased from 1 to 10.
Inhibition of tumour promotion in mouse skin by extracts of rooibos (Aspalathus linearis) and honeybush (Cyclopia intermedia), unique South African herbal teas.


Evidence found that Rooibos extracts can help prevent:

1. Skin cancer in mice.

2. This is the first link between Rooibos and cancer prevention ever discovered.
Highlights of Rooibos research (3)

Modulation of hepatic drug metabolizing enzymes and oxidative status by rooibos (Aspalathus linearis) and Honeybush (Cyclopia intermedia), green and black (Camellia sinensis) teas in rats.


- Evidence that Rooibos increases the GSH/GSSG ratio in rat liver after 10 weeks of drinking only a Rooibos extract

- Why is this so significant?

- What is GSH and GSSG?
Glutathione – the body’s own super antioxidant

Glutamic acid

Cysteine

Glycine
Glutathione (GSH) when oxidised forms oxidised GSSG
Understanding the GSH/GSSG ratio

GOOD  GSH/GSSG = 8
BAD   GSH/GSSG = 1
A low GSH/GSSG ratio cannot counteract oxidative stress.

A high GSH/GSSG ratio can counteract oxidative stress.
In which diseases does oxidative stress play a key role?

- Cancer
- Inflammation
- Alzheimer’s
- Parkinson’s
- Liver disease
- Cystic fibrosis
- HIV
- AIDS
- Infection
- Heart attack
- Stroke
- Diabetes

Also involved in ageing

Surviving in a hostile world
the role of glutathione

CELLULAR AGING, DISEASE, DEATH

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Glutathione is made inside cells and cannot be taken as a supplement because it is broken down in the GIT
So what was found?
Rooibos extract increases GSH/GSSG ratio 4-fold

<table>
<thead>
<tr>
<th>Different teas</th>
<th>GSH/GSSG ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>Water</td>
<td>8</td>
</tr>
<tr>
<td><strong>Rooibos processed</strong></td>
<td><strong>39</strong></td>
</tr>
<tr>
<td>Rooibos unprocessed</td>
<td>42</td>
</tr>
<tr>
<td><strong>Honeybush processed</strong></td>
<td><strong>21</strong></td>
</tr>
<tr>
<td><strong>Honeybush unprocessed</strong></td>
<td><strong>44</strong></td>
</tr>
<tr>
<td><strong>Black tea</strong></td>
<td><strong>13</strong></td>
</tr>
<tr>
<td><strong>Green tea</strong></td>
<td><strong>13</strong></td>
</tr>
</tbody>
</table>

Graph showing the GSH/GSSG ratio for different teas.
Looking ahead

Key questions to be answered in the future:

Can Rooibos help prevent human cancers?

As yet we do not know – but I believe there is a good chance and a way to find out.


Dietary flavonoids and colorectal adenoma recurrence in the Polyp Prevention Trial

However, high intake of flavonols, which are at greater concentrations in beans, onions, apples, and tea, was associated with decreased risk of advanced adenoma recurrence (4th versus 1st quartile during the trial; odds ratio, 0.24; 95% confidence interval, 0.11, 0.53; P(trend) = 0.0006).

Rooibos contains flavonols.

Could regular use of Rooibos significantly inhibit the recurrence of colorectal adenoma over and above the diet?
Congratulations

CANSA wishes to congratulate the MRC PROMEC team working on Rooibos for excellent progress over the past 8 years. CANSA is delighted that an investment of R1 million for this research has yielded such promising results.

Significant world-first discoveries have been made showing that this plant, which is totally unique to South Africa, has great promise as a source of anti-oxidants which in rats can induce a 400% increase in the GSH/GSSG ratio which is absolutely necessary for optimal health. This is especially significant because glutathione cannot be taken orally. It is the body’s own supreme anti-oxidant. Furthermore it has been shown, for the first time, that Rooibos extracts can prevent skin, liver and oesophagus cancers in animals.

It is now of great importance to find out if similar biochemical changes take place in humans drinking Rooibos tea on a daily basis. CANSA fully supports the philosophy that prevention of cancer is possible by neutralising carcinogens and also by eating and drinking food and beverages made from plants which contain a host of molecules that inhibit carcinogenesis one way or another.

It is also important to find out if Rooibos can help to prevent human cancers such as the recurrence of colorectal adenomas.

I believe this is the Rooibos agenda for the years to come.