Aspalathin belongs to the 'polyphenol' phytonutrient group; dietary components of plant-foods heavily studied for their benefits to human health. It is hypothesised that aspalathin could be responsible for some of the health benefits related to Rooibos tea consumption. For this to be possible, aspalathin must first be absorbed into the body. Aspalathin is somewhat unique amongst polyphenols, as it has a glucose strongly attached to its chemical structure. This was hypothesised to prevent human absorption.

1. Rooibos Tea
- Rooibos tea (pronounced Roy-boss) is a hot beverage produced in South-Africa, and has increasing global popularity.
- Consumption is said to be linked to many health benefits, including relief from migraines, nervous tension, depression, nausea, and even hangovers!
- Rooibos tea is very rich in aspalathin (around 40 mg per cup).

2. Aspalathin
- Aspalathin belongs to the 'polyphenol' phytonutrient group; dietary components of plant-foods heavily studied for their benefits to human health.
- It is hypothesised that aspalathin could be responsible for some of the health benefits related to Rooibos tea consumption.
- For this to be possible, aspalathin must first be absorbed into the body.
- Aspalathin is somewhat unique amongst polyphenols, as it has a glucose strongly attached to its chemical structure.
- This was hypothesised to prevent human absorption.

3. How Might Aspalathin Be Absorbed?
- Most polyphenols are absorbed by the human body in the small intestine:
  - i. Aspalathin won't passively cross the intestinal barrier due to the glucose attached to its structure:
  - ii. Unlike many other polyphenols, enzymes on the intestinal surface won't remove the strongly attached glucose:
  - iii. It's possible that glucose transporters in the intestinal barrier may actively move it across:
  - iv. Or that Aspalathin might move through small gaps called 'tight-junctions' between the intestinal cells:

4. Is Aspalathin Absorbed?
- Yes! Aspalathin was shown to be absorbed in 6 human subjects after drinking Rooibos tea.
- Two modified forms of aspalathin (known generally as 'metabolites') were found in human urine, measured by a very sensitive technique known as MRM mass-spectrometry.
- The glucose had not been removed from the chemical structure, showing a potential new mechanism of absorption for this class of polyphenols with a strongly attached glucose.
- This information about the structure of aspalathin metabolites is important, as it will dictate its bioactivity and any health benefits associated with Rooibos tea consumption in the body.

5. Future Work
- Now aspalathin has been characterised in terms of the metabolites present in the body, it is possible to begin to study the bioactivity of these compounds.
- Cultured cell models will allow elucidation of the mechanism of absorption, and potential ways of increasing absorption.

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