

AIS SPORTS SUPPLEMENT FRAMEWORK

QUININE GROUP B



As a group B supplement, this supplement should only be used under the close supervision of your sports dietitian

Quinine is a bitter compound sourced from the bark of the cinchona tree and has a history of use in medicine as a treatment for malaria. It has a strong bitter taste and is used in small amounts in tonic water as a flavouring agent. Quinine is a Transient Receptor Potential (TRP) channel agonist, located on the outside of cells that are involved in communicating a variety of sensations including pain, temperature, taste, pressure and stretch. Quinine may improve performance via its strong bitter taste, stimulating areas of the brain to reduce perception of effort.



Batch-tested quinine supplement products are not readily available



Quinine as a powder (Quinine Hydrochloride Dihydrate), should not be trialled. Seek the expert guidance of your sports dietitian for advice on where to source quinine



Quinine needs to be swirled in the mouth, then likely swallowed so it has contact with specific receptors in the back of the mouth and throat

BENEFITS OF SUPPLEMENTATION



BRAIN
EXCITABILITY



INCREASED
POWER OUTPUT

WHEN TO CONSIDER SUPPLEMENTATION



Short, high intensity exercise (30 secs to 4 mins)

HOW TO USE IT

> Quinine should be handled carefully with expertise from your sports dietitian or sports physician

1 single dose =



Mix 0.02 g
Quinine
Hydrochloride
Dihydrate*



+

25 ml
Deionised
water

* S1125, Sigma-Aldrich Pty Ltd, Australia

Swirl in mouth and then swallow immediately before effort



This dose may trigger an extremely bitter sensation in the mouth which may be counteracted post event with a salty snack (e.g. salt and vinegar rice crackers or salted nuts).



Inappropriate handling or accidental inhaling of quinine powder can cause acute oral toxicity, impaired breathing and skin sensitisation.



Once mixed in water, solution should be consumed as soon as possible.



QUININE



FOOD FIRST?

> Quinine is used in tonic water to give its bitter flavour. The amount of quinine is often not declared on the label and varies in commercial beverages. Around 1 L of tonic water or more provides the amount of quinine used in research, which is not practical to consume immediately pre-exercise.

CRAMPING

> While historically quinine has been explored as a treatment for muscle cramps experienced during exercise, some health concerns have been raised associated with this. More effective strategies to help manage exercise induced muscle cramps include:

- Increase fitness
- Heat management
- Stretch muscles vulnerable to cramping
- Adequate fuelling
- Hydration (consider [electrolytes](#)).
- Supplements e.g. Other TRP Channel agonists such as [pickle juice](#)

CONCERNS & CONSIDERATIONS



No adverse effects have been reported when quinine is used in low doses (0.02 g per 25 mL solution) prior to, or during, exercise. Higher doses may cause nausea.



Research supporting benefits of quinine supplementation has been cycling specific. It is unclear if this translates to real world performance, including that in other sports.



A single dose of quinine solution as above is considered safe. However, there are concerns of serious medical complications with use of quinine daily to reduce muscle cramps.

See [pickle juice infographic](#) for more info on cramps.



Ingestion of strong-tasting nutrients alongside or prior to quinine ingestion could interfere with its performance effects if this counteracts the bitter taste or sensory response triggered.



Quinine in any form should be avoided by pregnant women and people with liver failure.



Further research is required to confirm application in sport, plus most effective ingestion protocol.



All supplements have a doping risk of some kind. Some supplements are riskier than others. Athletes should only use batch-tested supplements. The Sport Integrity Australia app provides a list of more than 400 batch-tested products. (www.sportintegrity.gov.au/what-we-do/supplements-sport).

While batch-tested products have the lowest risk of a product containing prohibited substances, they cannot offer you a guarantee. Before engaging in supplement use, you should refer to the specific supplement policies of your sport or institute and seek professional advice from an accredited sports dietitian (www.sportsdietitians.com.au). Athletes are reminded that they are responsible for all substances that enter their body under the 'strict liability' rules of the World Anti-Doping Code.

