



## Cognitive function

# How Korean Red Ginseng has a beneficial effect on concentration



## Background



## Theory

### The effect of Korean red ginseng (KRG) on cognitive function:

There is some evidence from animal studies that ginseng has a beneficial effect on cognitive performance. KRG was shown in one study to significantly reduce the P300 latency, suggesting that it can directly modulate cerebro-electrical activity. The current study used the P300 event-related potential (ERP) and the neurocognitive function test to investigate the effect of KRG on cognitive performance.



## Method

### A double-blinded, randomized, placebo-controlled trial:

15 subjects were randomly assigned to receive a daily dose of 4.5g KRG (n=8) or placebo (n=7) for a 2-week trial. The P300 ERP and neurocognitive function test were performed at baseline and repeated 2 week later. The effects of KRG and the placebo on cognitive function were assessed by comparing the changes in the two groups over the trial period in the P300 ERP and neurocognitive function test.

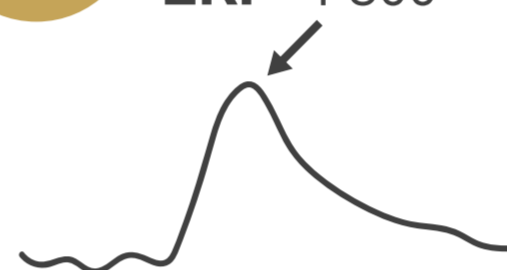


## Outcome

With 15 healthy subjects (8 receiving KRG, 7 receiving placebo) over 2 weeks



ERP P300

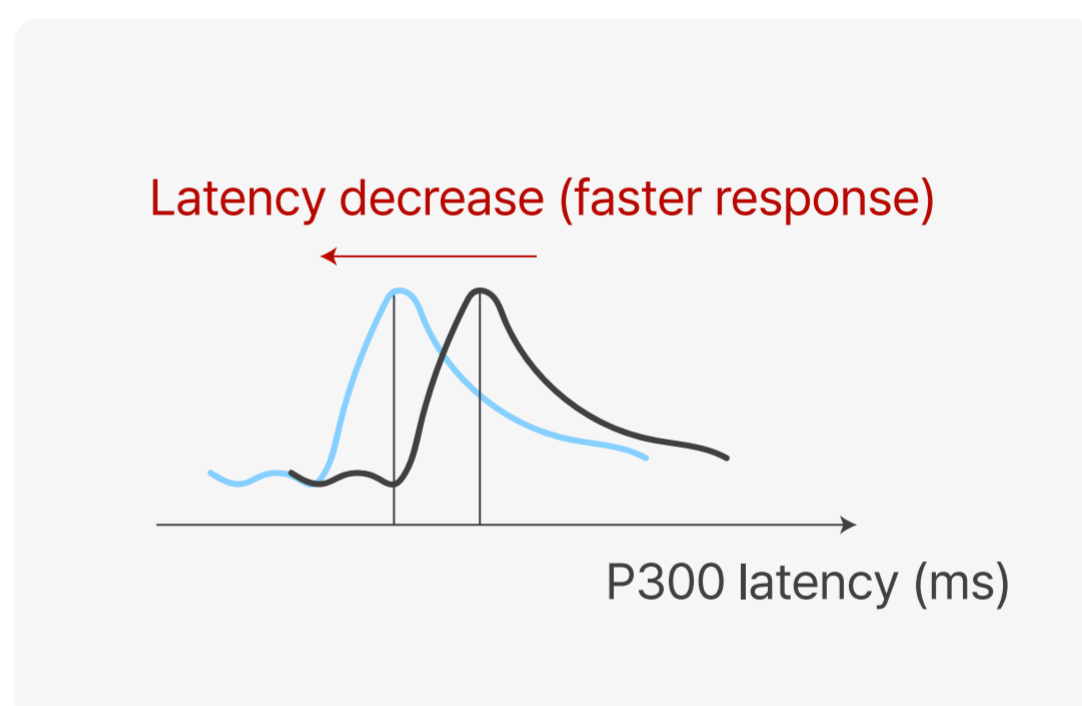
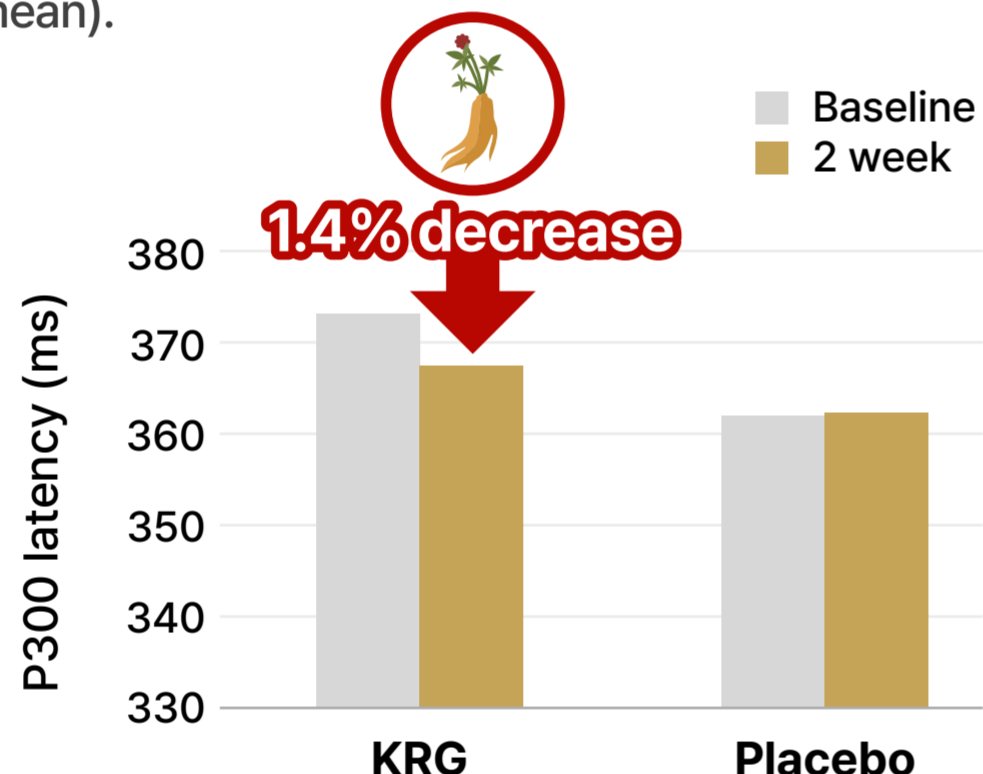


**P300** : Potential marker of cognitive function (e.g., attention, discrimination, and working memory)

## The speed of cognitive function(stimulus classification)

### Faster stimulus classification proven by P300 latency decrease

A sensitive temporal measure of the neural activity underlying the processes of attention allocation and immediate memory After 2 weeks, **KRG group showed a decreased P300 latency in the central region** (Cz, C3, C4, and C mean).



## The degree of brain activity for incoming stimulus (P300 voltage)

### Greater brain activity for incoming information proven by greater P300 voltage

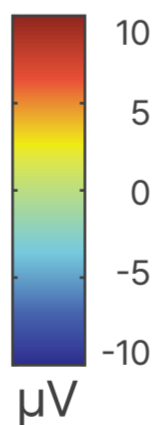
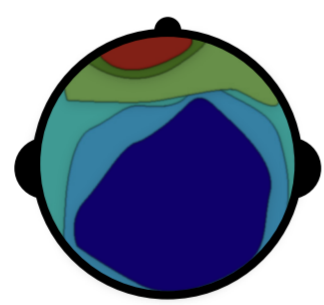
A measure of central nervous system activity that processes incoming information into memory representations of the stimulus and its context

**KRG group showed a greater decreased in P300 voltage difference** from baseline compared with that of the placebo group during 2-week trial.

### Voltage difference between KRG and placebo group

Time=[0.3 0.35]

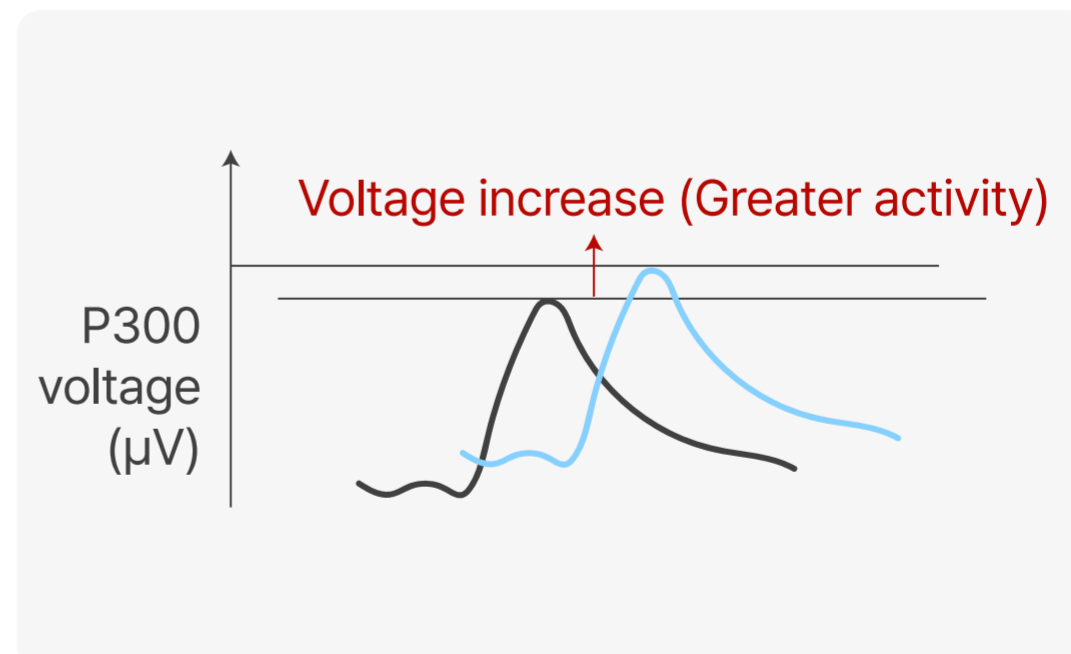
Time=[0.3 0.35]



Baseline

2 week

µV



## Impact



### Modulation of cerebro-electrical activity related to cognitive function

The decreased P300 latency may indicate an improvement in cognitive function, especially in association with attention allocation, immediate memory and behavior reaction time.

## Conclusion

### The effect of Korean Red Ginseng on concentration evidenced by neurophysiological activity

The KRG group showed a decreased P300 latency in the central area, suggesting that the decreased latency in ERP after **KRG supplementation is associated with improved cognitive function.**