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File: ■ Ashwagandha (*Withania somnifera*)
■ Cognition
■ Psychomotor Performance

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RE: Ashwagandha Improves Cognitive and Psychomotor Performance in Healthy Adult Males

Pingali U, Pilli R, Fatima N. Effect of standardized aqueous extract of *Withania somnifera* on tests of cognitive and psychomotor performance in healthy human participants. *Pharmacognosy Res.* 2014;6(1):12-18.

Ashwagandha (*Withania somnifera*) is used in Ayurvedic medicine to enhance memory and overall brain function. Many in vitro and in vivo studies demonstrate the potential benefits of ashwagandha; however, human studies are limited. The purpose of this randomized, double-blind, placebo-controlled, crossover study was to evaluate the cognitive and psychomotor effects of a standardized aqueous ashwagandha extract in healthy young male subjects.

Healthy men (n = 20, aged 20-35 years) participated in this study conducted at Nizam's Institute of Medical Sciences; Punjagutta, Hyderabad, India. The authors confirmed that the subjects were healthy by conducting a detailed medical history; physical examination; evaluation of hematological, hepatic, and renal parameters; electrocardiogram (ECG); and chest X-ray. Subjects were excluded for any evidence of physical illness, drug abuse, or aberrant laboratory findings during screening. All the subjects were required to abstain from nicotine, caffeine, and alcohol for at least 24 hours prior to and during the test day. Subjects were randomly assigned to receive either placebo or 1000 mg/day of an aqueous ashwagandha root and leaf extract (Sensoril®; Natreon Inc.; New Brunswick, New Jersey) for 14 days. As determined by high-performance thin layer chromatography analyses of the extract and standard references, each capsule contained "not less than 10% withanolide glycosides, not more than 0.5% of withaferin-A, and not less than 32% of oligosaccharides." The identical placebo capsules contained microcrystalline cellulose, lactose, and magnesium stearate.

There was a 14-day washout period before the subjects were crossed over to the other treatment for 14 days. The following psychomotor performance tests were conducted at baseline and at the end of each crossover period: finger tapping test (evaluates motor system performance), simple reaction test (assesses attention and sensory-motor performance), choice discrimination test (assesses attention and sensory-motor

performance and response speed), digit symbol substitution test (assesses attention, response speed, central integration, and visuo-motor coordination), digit vigilance task (assesses alertness and vigilance while placing minimal demands on the selectivity and capacity components of attention), and card sorting test (assesses sensory, motor, central integrative, and executive functions).

Compared with placebo and baseline, ashwagandha significantly improved the reaction time for the following tests: digit symbol substitution ($P < 0.05$ and $P < 0.001$, respectively), simple reaction ($P < 0.01$ for both), choice discrimination ($P < 0.05$ for both), digit vigilance ($P < 0.01$ for both), and card sorting ($P < 0.05$ for both). There was no significant effect on motor system performance according to the finger tapping test. The mean percent reduction in reaction time between groups at study end was statistically significant for digit symbol substitution ($P < 0.05$), digit vigilance ($P < 0.01$), and simple reaction ($P < 0.05$).

In summary, 1000 mg/day of standardized ashwagandha extract improved cognitive and psychomotor performance in healthy young adult males when taken for 14 days. However, the data cannot be extrapolated to patients with medical conditions, elderly healthy men, or healthy women of any age. Another limitation of the study is the small population size. The authors conclude that "multicentric long-term clinical studies in patients are required to confirm its therapeutic efficacy in disease states associated with impaired cognition and psychomotor function."

—Heather S. Oliff, PhD

Referenced article can be found at www.phcogres.com/article.asp?issn=0974-8490;year=2014;volume=6;issue=1;spage=12;epage=18;aulast=Pingali.

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