PATIENTS WITH COCAINE USE DISORDER, A PILOT CLINICAL TRIAL OF THE EFFICACY OF AN INHIBITOR OF ALDH2

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Objectives

Inhibitors of aldehyde dehydrogenase-2 (ALDH2) has been associated with a reduction of cocaine use in rodents (1). Daidzein, an isoflavone contained in soy beans, is an ALDH2 inhibitor. The objective was to study the effects of a soy bean extract containing daidzein in cocaine use in humans.

Purpose

To carry out an exploratory clinical trial to evaluate the possible efficacy of a natural inhibitor of ALDH2 (daidzein in soy bean extracts) in patients with cocaine use disorder.

Methods

The trial design wasunicentric, open, non-controlled clinical trial. Subjects participated along 14 weeks (12 weeks of treatment and 4 weeks of follow-up). Efficacy was evaluated by urine analysis, Substance Use Report (SUR), Severity Dependence Scale (SDS), Brief Substance Craving Scale (BSCS) and Cocaine Selective Severity Assessment (CSSA) along the period. An intention to treat analysis was performed and the data were analyzed with SPSS 18.0 statistical package.

Results

Nine patients were included. Table 1 describes main characteristics of participants.
Seven (77.8%) patients ended the study, no one was abstinent from cocaine during the last three weeks of the treatment; but according to the SUR, three (33.3%) of them reported to consumed less than 20% of the days during the last three weeks. Also, SDS had a significant decrease between weeks 0-12 (p=0.024), and weeks 0-16 (p=0.002). BSCS and CSSA decreased their values but not achieved significant values. (Table 2)

Table 1.- Sociodemographic and clinical characteristics of the sample (n=9)

	Subjects n=9
Age (mean+SD, years)	48+9.3
Male n, (%)	88 (88.9)
Civil status married n, (%)	6 (66.7)
Employed, n (%)	4 (44.4)
Cocaine Use Disorder	
Age of onset (mean+SD, years)	30.44+9.28
Previous treatments (n, %)	6 (66.7)
Comorbid Substance Use Disorders, last 12 months (n, %)	
Alcohol	1 (11.1)
Cannabis	1 (11.1)
Opiates	0
Other Psychiatric disorders, lifetime (n, %)	
Mood disorders	4 (44.4)
Anxiety disorders	1 (11.1)

Table 2.- Comparison of the evolution of Brief Severity Dependence Scale (SDS), Brief Substance Craving Scale (BSCS) and Cocaine Selective Severity Assessment (CSSA) scores along the 0, 12 and 16 weeks of the clinical trial in the 9 patients included.

Scales	Scores (mean+SD)	p
SDS		
Week 0-12	4.00+4.33	0.024
Week 0-16	5.77+3.80	0.002
Week 12-16	1.78+2.59	0.073
BSCS		
Week 0-12	1.89+3.95	0.1
Week 0-16	2.44+4.36	0.1
Week 12-16	0.55+2.55	0.5
CSSA		
Week 0-12	1.00+1.56	0.80
Week 0-16	1.78+17.3	0.76
Week 12-16	0.78+15.4	0.88

Conclusions

These preliminary results show a high retention in treatment, and a decrease of the severity of cocaine use but patients did not reach complete abstinence. Accordingly, we consider that daidzein could be a potential therapeutic value for cocaine use disorder. Further studies with placebo-controlled design (double-blind) and including more subjects are needed.

Reference

1. Yao L, et al. Inhibition of aldehyde dehydrogenase-2 suppresses cocaine seeking by generating THP, a cocaine use-dependent inhibitor of dopamine synthesis. Nat Med. 2010;16:1024-8.

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