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Remedial effects of Yokukansan, a *Kampo* medicine, on social interactive deficits in Thiamine-deficient mice

Takuji Yamaguchi*, Kyoji Sekiguchi, Zenji Kawakami, Akinori Nishi, Yasushi Ikarashi, Yoshio Kase

Tsumura Research Laboratories, Tsumura & Co. 3586 Yoshiwara, Ami-machi, Inashiki-gun, Ibaraki 300-1192, Japan

*Corresponding Author: Email: yamaguchi_takuji@mail.tsumura.co.jp

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Abstract

The purpose of present study was to clarify remedial effects of *yokukansan*, a traditional Japanese medicine (*Kampo*), on social interactions such as aggressive and social behaviors observed in mice that were thiamine deficient (TD) mice due to feeding a TD diet. A significant increase in aggressive behavior and significant decrease in social behavior were observed in TD mice on the 21st day of TD feeding. TD diet was changed to control diet on the 27th day because TD mice began to die after the 27th day, and the animals were fed until the 35th day. Although the TD-induced decrease in body weights of TD mice was recovered by switching from TD diet to control diet, abnormal social interactive behaviors observed on the 21st day were still retained on the 35th day. Repeated oral administration of yokukansan (0.5 and 1.0 g/kg, once a day) for 14 days from the 22nd day to the 35th day ameliorated both aggressiveness and abnormal social behaviors on the 35th day. These results suggest that yokukansan has remedial effects on the increased aggressive behavior and decreased social behavior.

Key words: Yokukansan; Kampo; thiamine deficiency; aggressive behavior; social interaction

Introduction

Yokukansan is one of the traditional Japanese medicines called "*kampo*" medicines in Japan. This medicine has been approved by the Ministry of Health, Labor, and Welfare of Japan as a remedy for neurosis, insomnia, and irritability in children. Recently, yokukansan was reported to ameliorate behavioral and psychological symptoms such as hallucinations, agitation, and aggressiveness in patients with Alzheimer's disease, dementia with Lewy bodies, and other forms of senile dementia (Iwasaki *et al*., 2005, Mizukami *et al*., 2009). Until now, various dementia models have been used for research in the pathogenesis and therapy of dementia (Ikarashi *et al*., 2004, Maslish *et al*., 2001, Ishimaru *et al*., 1998, Given

