



# Self Injurious Behavior Observed after Administration of Poly herbal Combination for the Management of Antidepressant in Albino Rat

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## Abstract

Self-Injurious Behavior (SIB) is the behavior of individuals who impose physical damage conceivably pain, leading themselves that highly established in autism and other neuro-developmental disorders. We have investigated the antidepressant activity of polyherbal combination using lead-induced depressant in the rat model. The rats were administered with lead acetate once daily for seven days, and vulnerability for lead-induced depressant was evaluated. Then the rat was treated with a polyherbal combination of *Camellia sinensis* and *Boerhavia diffusa* at a dose of 200 mg/kg, particularly one rat developed hyperactivity, long duration of self-injurious behaviors like licking and cutting own limbs observed at the 22<sup>nd</sup> day of treatment. Over the day rat was die and the brain removed for histopathological examination. The finding suggests that the combination of *Camellia sinensis* and *Boerhavia diffusa* may contribute to the expression of SIB, and specify that further investigation is defensible.

**Keywords:** Self-injurious behavior; Depressant; *Camellia sinensis*; *Boerhavia diffusa*

## Introduction

Self-Injurious Behavior (SIB) is an overwhelming, chronic, and pigeonhole neuronal behavior disorder in which tissue damage is self-inflicted [1]. The expression of individuals who impose physical damage conceivably pain, leading themselves may be called as self-injurious behavior [2]. Even though the correct appearance of these behaviors typically disagrees between persons, skin-picking, self-biting, head-banging, and head-punching [3]. Clinical studies suggested that the SIB is particularly prevalent in disorders where ongoing distress and pathological irritability are the prominent features, and emotional stress become a key trigger [4]. Although the unusual activity of the Limbic-Hypothalamic-Pituitary-Adrenal (LHPA) axis is one of the wide-ranging characteristics of psychologically disabled self-injurers. However, it is unclear that the LHPA axis involves in deregulations of predisposing factor or a consequence of SIB in preclinical studies [5,6].

The homogeneity of this incidence across neuronal disorders and the heterogeneity of expression within specific disorders have been suggested as shared biochemical mechanisms that confer vulnerability for SIB [7], while the rats treated with high doses or chronic administration of psychostimulants such as amphetamine, methamphetamine, and pemoline, the SIB accompanied by hyperactive locomotors behavior and multiple stereotypical behaviors i.e., grooming and licking [8].

The mechanisms responsible for SIB in the psycho-stimulant models remain unclear but possible involve their ability to stimulate the release of monoamines in the brain [9]. SIB also consequences from direct microinjection of amphetamine into the striatum of rats play a crucial role and suggesting a release of dopamine in this region [10]. The study was evaluated for the treatment of depression in a lead-induced rat model using a polyherbal combination of *Camellia sinensis* and *Boerhavia diffusa* orally administered at a dose of 200 mg/kg body weight for 35 days.

## Observation

The preclinical study was observed that the rat treated with polyherbal combination of *Camellia sinensis* and *Boerhavia diffusa* at a dose of 200 mg/kg, particularly one rat developed hyperactivity, multiple stereotypical behaviors and licking and cutting own limbs (symptoms of SIB) produced at

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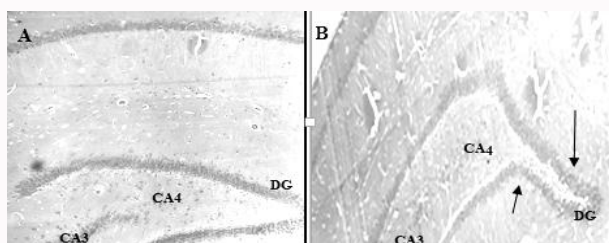
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**Figure 1:** Self-injurious behavior stages in the experimental rat after administration of the Polyherbal combination of *Camellia sinensis* and *Boerhavia diffusa*.



**Figure 2:** The brain histopathology of the experimental animal showing as; A) Normal rat hippocampal showed normal shape and size. CA3, CA4 in the region of the hippocampus, and DG (Dentatus gyrus) as in normal conditions; B) SIB rat hippocampal showed abnormal shape and size CA3, CA4 in the region of the hippocampus, and DG with mild dysplasia of hippocampus (arrow remark).

22<sup>th</sup> day of treatment in the experimental rat (Figure 1).

The mechanism responsible for SIB in this model is inadequately understood but thought to involve disruption of dopaminergic or adenosinergic systems in the striatum region that confirms by the histopathological changes in the hippocampal region (Figure 2).

## Conclusion

Self-Injurious Behavior (SIB) is incapacitating disarray that can lead to life-threatening cost. We have distinguished the stimulation of SIB using high doses of the polyherbal combination of *Camellia sinensis* and *Boerhavia diffusa* in the rat. It may only be produced severe SIB in a small proportion of the rats, when administered repeatedly at high doses (200 mg/kg/day), While the lower dose (100 mg/kg/day) of treated animal did not show any Self-injurious behavior. The topography of the tissue injury sites (paw, tail, and ventrum) was damaged critically, and the animal survived for the day only. The brain was isolated after dying of rat, and histological examination was conducted after the preparation slide in the hippocampal region. The rat showed abnormal hippocampal shape and size and also CA3, CA4 in the part of the hippocampus, Dentatus gyrus with mild dysplasia of hippocampus.

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