

Beneficial effects of n-hexane bark extract of *Onosma echioides* L. on diabetic peripheral neuropathy

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Onosma echioides Linn (Boraginaceae) is the most frequently used curative herb widely used for kidney obstruction, sciatic pain, and gout. The present study was designed to investigate the therapeutic effects of n-hexane bark extract of *O. echioides* (OE) L. root in vivo against Streptozotocin-induced diabetic neuropathy in SD rats. For in vivo activity, the experiment was categorized into five different groups (n = 5). Group-I was considered as nondiabetic/normal control (NC) treated with 0.5% carboxymethyl cellulose (CMC), Group II as diabetic control, Group-III, IV, and V served as diabetic treated with OE 50, OE 100, and pregabalin at a dose of 50, 100, and 10 mg/kg body weight, orally, respectively. Body weight, blood glucose, oral glucose tolerance test, behavioral studies (motor coordination test, thermal hyperalgesia, cold allodynia, locomotor activity, oxidative biomarkers (thio barbituric acid reactive substances [TBARS], superoxide dismutase [SOD], glutathione [GSH], and catalase), and histopathology of the sciatic nerve were performed. Treatment with OE showed a dose-dependent increase in neuroprotective activity by improving the myelination and decreasing the axonal swelling of nerve fibers. The verdicts of behavioral activities showed a remarkable effect on animals after the treatment of extract and standard drug pregabalin. In conclusion, our findings supported the traditional application of OE and explored its importance in the management of diabetic neuropathy. Additional clinical experiments may provide novel therapeutic drugs for diabetes and its complications. © 2019 Wiley Periodicals, Inc.

behavioral effect

diabetic neuropathy

histopathology

Onosma echioides

oxidative biomarkers

carboxymethylcellulose

catalase

glucose

glutathione

hexane

neuroprotective agent

Onosma echioides linn extract

plant extract

pregabalin

streptozocin

superoxide dismutase

thiobarbituric acid reactive substance

unclassified drug

animal cell

animal experiment

animal model

animal tissue

Article

bark

body weight

Boraginaceae

cold allodynia

controlled study

drug dose increase

drug dose reduction

glucose blood level

in vivo study

male

motor coordination

motor function test

myelination

nerve fiber

nerve fiber degeneration

neuroprotection

nonhuman

Onosma echioides linn

oral glucose tolerance test

plant root

priority journal

protein blood level

rat

sciatic nerve

Sprague Dawley rat

streptozotocin-induced diabetic neuropathy

therapy effect

thermal hyperalgesia

tissue section