



RESEARCH ARTICLE

# STUDY OF ANALGESIC ACTIVITY OF THE METHANOLIC EXTRACT OF *ACORUS CALAMUS L.* AND *OROXYLUM INDICUM VENT* BY ACETIC ACID INDUCED WRITHING METHOD

S.M. Zahid Hosen<sup>1\*</sup>, Rasel Das<sup>2</sup>, Zahed Bin Rahim<sup>1</sup>, Nipa Chowdhury<sup>1</sup>, Linkon Paul<sup>2</sup> and Dibyajyoti Saha<sup>1</sup>

<sup>1</sup>Department of Pharmacy, Begum Gul Chemonara (BGC) Trust University, Chittagong, Bangladesh

<sup>2</sup>Department of Biochemistry and Biotechnology, University of Science and Technology, Chittagong, Bangladesh

\*E-mail: smzahidhosen@gmail.com

Tel.: +8801913631135

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The present research was conducted to investigate the analgesic activity of methanol extracts of plants of *Acorus calamus* (Family: *Acoraceae*) and *Oroxylum indicum* (Family: *Bignoniaceae*). The analgesic activity of the methanolic extract of the *Acorus calamus* and *Oroxylum indicum* at the dose of 250 and 500 mg/kg body weight was evaluated against the standard drug - Diclofenac sodium, at a dose of 25 mg/kg body weight. Adult swiss albino mice of either sex of five numbers in each group, was undertaken for study and evaluated by acetic acid induced writhing method. The methanol extract of *Acorus calamus* inhibited writhing reflex by 30.77% and 39.86% at the dose of 250 and 500 mg/kg body weight, respectively while the methanolic extract of *Oroxylum indicum* inhibited writhing reflex by 26.22% and 36.36% at the dose of 250 and 500 mg/kg body weight. The methanolic extract of *Acorus calamus* was found to be more active than *Oroxylum indicum* as a pain killer.

**Key words:** *Acorus calamus*, *Oroxylum indicum*, Analgesic activity, Writhing reflex.

## INTRODUCTION

Literature is enriched with several findings proving ability of microorganisms, higher plants and marine sponges to produce a wide spectrum of natural products with different pharmacological activities (Almeida *et al* 2001; Malairajan *et al* 2006; Ebaba *et al* 2010; Dahiya and Gautam, 2011; Jain *et al* 2011). Acetic acid is a pain stimulus. Intraperitoneal administration of acetic acid (0.7%) causes the release of free arachidonic acid from tissue phospholipid by the action of phospholipase A<sub>2</sub> and other acyl hydrolases. There are three major pathways in the synthesis of the eicosanoids from arachidonic acid. All the eicosanoids with ring structures *i.e.* the prostaglandins, thromboxanes and prostacyclines are synthesized *via* the cyclooxygenase pathway (Hossain *et al* 2009). The leucotrienes, HETE (hydroxy eicosatetra-

enoic acids) and HPETE (hydroperoxy eicosatetraenoic acids) are hydroxylated derivatives of straight-chain fatty acids and are synthesized *via* the lipoxygenase pathway (Adedapo *et al* 2009). The released prostaglandins, mainly prostacyclin (PGI<sub>2</sub>) and prostaglandin E have been reported to be responsible for pain sensation by exciting the A $\delta$ -fibres. Activity in the A $\delta$ -fibres cause a sensation of sharp well localized pain (Yerima *et al* 2009).

The acetic acid induced writhing method is an analgesic behavioral observation assessment that demonstrates a noxious stimulation in mice (Whittle, 1964). The test consists of injecting 0.7% acetic acid solution intraperitoneally and then, observing the animal for specific contraction of body referred as 'writhing'. A comparison of writhing is made between