

Acetic acid induced painful endogenous infliction in writhing test on mice

Sir,

Writhing test is a chemical method used to induce pain of peripheral origin by injection of irritant principles like phenylquinone, acetic acid in mice. Analgesic activity of the test compound is inferred from decrease in the frequency of writhings. The manifestations of abdominal writhings in mice were first described by Sigmund *et al.*^[1] as an arching of back, extension of hind limbs and contraction of abdominal musculature. The writhing response is considered as a reflexive test and is without clinical counterparts as it cannot be performed in human and sensations involved are unknown. Further, authors pointed out that the writhing test produced severe pain in mice which raises ethical concern regarding its use. Stevens^[2] has commented on the report of one pharmaceutical company, Warner –Lambert Research Institute, Morris Plains N.J. which company has conducted about 100 experiments on 5000 mice. 0.1 ml of phenylquinone was injected intraperitoneally to induce writhing and animals began stretching their abdomen in few minutes. He wrote that ‘*writhing, of course, means agony, a standard test that should not be tolerated in any civilized country*’.

Writhings generated by parenteral administration of acetic acid in mice, are due to profound pain of endogenous nature which recur for a prolonged period of time. Due to irritant nature, these principles are also prone to induce lesions. Writhing is an overt response to the intense pain induced by irritant principles via nociceptors characterized by episodes of retraction of abdomen and stretching of hind limbs. The signals transmitted to central nervous system in response to pain due to irritation, cause release of mediators such as prostaglandins which contributes to the increased sensitivity to nociceptors. Writhing test was in practice for the evaluation of analgesic effect till 2004. However, the test was withdrawn from Sept. 2004, soon after implementation of report of ministry of environmental and

forest, animal welfare division, Govt. of India. In CPCSEA report (2004),^[3] it was stated that laboratory animals used for the experimentation should be properly used and pain and sufferings inflicted in animals should be avoided or minimized if avoidance is not possible. Scientists and investigators should proceed on the basis that experimental procedures that cause pain or sufferings in human beings will also cause similar pain or sufferings in animals.

Despite government’s decision, number of scientific journals publish papers in which writhing test is employed. It is suggestive to kindly adhere to the government’s notification of avoidance of tests causing longer lasting painful infliction and to perform in this context, triple analgesic test using thermal, mechanical and electrical methods in which animals are exposed to momentary pain or sufferings. The inferences drawn from these tests can be used to evaluate analgesic effect of new active principles.

Shivaji P. Gawade

Satara College of Pharmacy, Satara, Shivaji University, Satara, Maharashtra, India

Address for correspondence:

Shivaji P Gawade, Professor in Pharmacology and Principal, Satara College of Pharmacy, Plot 1539, New additional MIDC, Degaon, Satara – 415 004, Maharashtra, India.
E-mail: gneskw@gmail.com

REFERENCES

1. Dannerman PJ. Monitoring of analgesia in anesthesia and analgesia in laboratory animals. In: Kohn DK, Sally K, Wixson B, White WJ, John G, editors. Ch. 6. USA: Academic Press; 1977. p. 83-99.
2. Stevens CG. Human Perspectives. In Future of animals, cells, models and systems in research, development, education and testing. Washington D.C.: Proceedings. of Symp. National Academy of Sciences; 1971. p. 16-24.
3. CPCSEA report (principle 3, number 3) website. Available from: E.nvfor.nic.in/divisions/wad/aw_consult_group.pdf. [Last accessed on 10/09/2004].

Access this article online

Quick Response Code:



Website:

www.jpharmacol.com

DOI:

10.4103/0976-500X.103699