

ISSN 0975-4407 (Print)  
2321-5836 (Online)

www.anvpublication.org  
www.rjppd.org



## RESEARCH ARTICLE

# Effect of Squalene in surgically induced Gastro-oesophageal Reflux Disease on rats

Lubna Azmi<sup>1,2</sup>, Shyam Sundar Gupta<sup>1</sup>, Ila Shukla<sup>1</sup>, Padam Kant<sup>2</sup>, O. P. Sidhu<sup>1</sup>, Ch. V. Rao<sup>1\*</sup>

<sup>1</sup>Pharmacognosy and Ethnopharmacology Division, CSIR-National Botanical Research Institute, Lucknow-226 001, Uttar Pradesh, India

<sup>2</sup>Department of Chemistry, Lucknow University, Lucknow-226 007, Uttar Pradesh, India

\*Corresponding Author E-mail: [chvrao72@yahoo.com](mailto:chvrao72@yahoo.com)

## ABSTRACT:

Squalene, a robust antioxidant compound, indicates the various biological effects with significant antiulcer activity. Henceforth, the present study was ventured to elucidate the effect of squalene on experimentally-induced gastro-oesophageal reflux disease on rats. Wistar rats of either sex were divided into five groups and started treatment for one week with standard rodent pellet diet and the food was withdrawn 18-24 h before the experiment though water was allowed *ad libitum*. Normal saline (control), GERD, supplemented with squalene 50 mg kg<sup>-1</sup> (SQ50), squalene 100 mg kg<sup>-1</sup> (SQ100), plus omeprazole 30 mg kg<sup>-1</sup> (OMZ 30) as liquid was added at 1 h prior to surgery. Treatment with squalene evidenced sententious physiological protection with scrutinized for pH, acidity (total and free), and volume of gastric juices and oesophagitis index. Squalene supplementary embarked diminishing effect on oxidative stress through synchronising the lipid and protein peroxidation along with regulating the enzymatic activity of SOD and catalase. Squalene significantly increases levels of GPx, GST, protein carbonyl, alkaline phosphatase and PGE2 and decreases sialic acid level. Squalene also modified the levels of immunoregulatory cytokines (IL-1 and IL-6) favourably. Squalene demonstrated inhibitory activities against COX-1, COX-2 and 5-LOX respectively. From the present line of evidences, it was concluded that squalene can import momentous protection against experimentally-induced gastro-oesophageal reflux disease by wrapping up the reactive oxygen species and through dual inhibition of the arachidonic acid pathways.

**KEYWORDS:** Squalene, Antioxidant, Gastro-oesophageal reflux disease, PGE2.

## INTRODUCTION:

Squalene (2, 6, 10, 15, 19, 23-hexamethyl 6, 6, 10, 14, 18, 20 tetracosahexane) is a polyunsaturated triterpene which is structurally similar to  $\beta$ -carotene, coenzyme Q10, vitamin A, E, and K. It is reported that the most potent naturally occurring squalene is found in amaranths seeds, rice bran, wheat germ oil and shark liver oil. It plays a pivotal role in the synthesis of sterols, cholesterol, steroid hormones, and vitamin D. Squalene has been utilized in pharmaceutical industry as immunological adjuvant in vaccines, anti-cancer, anti-tuberculosis, anti-fungal, liver diseases and anti-ulcer<sup>1</sup>. Ulceration at oesophagus has increased clinical and