



ISSN (E): 2277- 7695

ISSN (P): 2349-8242

NAAS Rating: 5.03

TPI 2019; 8(3): 214-215

© 2019 TPI

www.thepharmajournal.com

Received: 15-01-2019

Accepted: 18-02-2019

R Ramprasad

Department of Pharmacy,
Arulmigu Kalasalingam College
of Pharmacy, Anand Nagar,
Krishnan Koil, Tamil Nadu,
India

Nilsha Anil

Department of Pharmacy,
Arulmigu Kalasalingam College
of Pharmacy, Anand Nagar,
Krishnan Koil, Tamil Nadu,
India

Sameena Begam J

Department of Pharmacy,
Arulmigu Kalasalingam College
of Pharmacy, Anand Nagar,
Krishnan Koil, Tamil Nadu,
India

Kateeja Beevi T

Department of Pharmacy,
Arulmigu Kalasalingam College
of Pharmacy, Anand Nagar,
Krishnan Koil, Tamil Nadu,
India

N Venkateshan

Department of Pharmacy,
Arulmigu Kalasalingam College
of Pharmacy, Anand Nagar,
Krishnan Koil, Tamil Nadu,
India

Correspondence

R Ramprasad

Department of Pharmacy,
Arulmigu Kalasalingam College
of Pharmacy, Anand Nagar,
Krishnan Koil, Tamil Nadu,
India

In vitro urease inhibitory activity of aerial parts of *Baliospermum montanum*

R Ramprasad, Nilsha Anil, Sameena Begam J, Kateeja Beevi T and N Venkateshan

Abstract

Aim: To study the urease inhibitory property of *Baliospermum montanum* of ethanolic and aqueous extract.

Method: *Baliospermum montanum* commonly known as red physic nut, is a plant in the family Euphorbiaceae. Urease inhibition activity assay: 100 microlitre (2mg/ml jack bean urease) +100 microlitres of test compound +0.2 ml of 100 millimolar phosphate buffer and pH 6.8 urea containing 25 millimolar, Incubation for 30min in water bath at 37 °C, 600 microlitres of, 4% sulphuric acid+500microlitres of solution A and solution B, Incubation for 30min in water bath at 37 °C, absorbance at 625nm in UV-Visible spectrophotometer.

Results: Ethanolic extract of *Baliospermum montanum* shows % inhibition of 71.56 shows significant activity.

Conclusion: In the preliminary jack bean urease inhibitory studies using “Berthelot alkaline phenol-hypochlorite method. *Baliospermum montanum* have shown a very potential urease inhibitory property compared to other drugs and extracts. For further conformation this study should be carry out in depth to establish mechanism of action of urease inhibition by using *in vitro* methods. This study helps in developing anti H-pylori drugs which can be adjuvant to the anti-ulcer regimen.

Keywords: *Baliospermum montanum*, Urease Inhibitory, ulcer

Introduction

Gastric and peptic ulcer are the leading diseases of hospitalization in urban and rural areas across the world, which are characterized by epigastric pain, bleeding, erosion of mucus membrane, heart burning, etc... because of imbalance of protective mechanisms and aggressive mechanisms of stomach [1-3], uncontrolled acid release and which will be exacerbated by *Helicobacter pylori*- a bacteria which erodes mucous layer of stomach, decreases protective mechanism and causes damage to the underlying layers of stomach [4, 5]. Many antibacterial agents in use to kill the *H.pylori* but they affects microbial flora and may develop resistance and may cause side effects [6]. To eliminate these disadvantages, we conducted a research to inhibit the enzyme Urease. urease enzyme inhibition will decrease the survival of *H.pylori* due to absence of ammonia, so that these plants will help in the treatment of ulcer as adjunctive drugs along with proton pump inhibitors and other antiulcer agents [7].

Materials and Methods

Plant materials: *Baliospermum montanum* plants which are are taken from the college premises. Plant sample was individually powdered and 1gm was extracted by maceration method using ethanol as solvent for 24hrs [8]. The extract was filtered, concentrated under reduced pressure to dryness and stored at 0 °C until time of analysis.

The liberated ammonia was estimated using 500 µL of solution A (contained 5.0 g phenol and 25 mg of sodium nitroprusside) and 500 µL of solution B (contained of 2.5 g sodium hydroxide and 4.2 mL of sodium hypochlorite in 500 mL of distilled water) at 37 °C for 30 min and the absorbance was measured at 625 nm against the control. All reactions were performed in triplicate in a final volume of 1 ml [9].

Urease Assay. Exactly 25 µL of enzyme (Jack Bean Urease) solution and 5 µL of test compounds (0.5mM concentration) were incubated for 15 min at 30 °C. The aliquot was taken after 15min and again incubated with 55 µL of buffers containing 100mM urea for 15min at 30 °C. Ammonia production was measured as a urease activity by indophenol method as described earlier [11].

Final volumes were maintained as 200 μL by adding 45 μL phenol reagent (1% w/v phenol and 0.005% w/v sodium nitroprusside) and 70 μL of alkali reagent (0.5% w/v NaOH and 0.1% active chloride NaOCl) [12, 13]. The increase in absorbance was measured at 630nm after 50min at pH 8.2. The results (change in absorbance per min) were calculated spectrometrically on different concentrations of drugs in the absence and presence of ascorbic acid [14]. Thiourea was used as the standard inhibitor and percentage inhibitions were calculated. Percentage of inhibitions were calculated using the formula $(100 - (\text{OD sample} / \text{OD control}) \times 100)$. The IC50 values were calculated using statistical software, Graphpad PRISM

Results

Table 1: *In vitro* Urease Inhibitory Activity of Aerial Parts of *Baliospermum montanum*

Compound name	Test dose	Percentage of inhibition (%)
<i>Baliospermum montanum</i>	2mg/ml	14.65 \pm 0.23
	4mg/ml	22.89 \pm 0.45
	6mg/ml	39.01 \pm 0.21
	8mg/ml	52.99 \pm 0.75
	10mg/ml	71.56 \pm 0.16

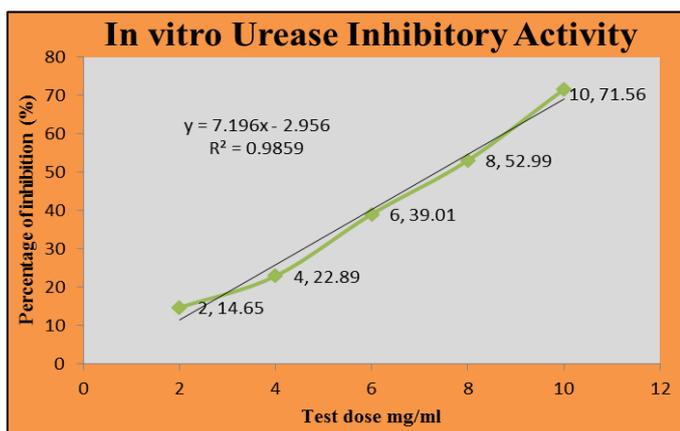


Fig 1: *In vitro* Urease Inhibitory Activity

Ethanol extract of *Baliospermum montanum* shows % inhibition of 73.56, 52.99 dose 8mg/ml and 10mg/ml respectively. It shows highly significant inhibitory activity against urinary infection. In developing countries, since the application of antibiotics is still under a poor management as a whole, there is a growing need for finding new medicinal plants especially anti-H pylori agents that can help further research.

Conclusion

In the preliminary jack bean urease inhibitory studies using "Berthelot alkaline phenol-hypochlorite method. *Baliospermum montanum* has shown a very potential urease inhibitory property extracts. For further conformational this study should be carry out in depth to establish mechanism of action of urease inhibition by using *in vivo* and *in vitro* methods. This study helps in developing anti-H-pylori drugs which can be adjuvant to the anti-ulcer regimen.

References

- Spandana U, Shaik Liakhat Ali, Nirmala T, Santhi M, Sipai Babu SD. A Review on *Tinospora cordifolia*,

International Journal of Current Pharmaceutical Review and Research, 4(2), 61-68.

- Kochlar SI. okra (lady finger) in tropical crops, a text book of economic botany. 1986; 1:263-264.
- Franklin W. Martin. Okra, Potential Multiple- Purpose Crop for the Temperate Zones and Tropics. Economic Botany. 1982; 36(3):340-345.
- Khan MA, Khan H, Tariq SA, Pervez S. Urease inhibitory activity of aerial parts of *Artemisia scoparia*: exploration in an *in vitro* study. Ulcers, 2014, 2014.
- Zahid H, Rizwani GH, Shareef H, Ali ST. Antioxidant and urease inhibition activity of methanol extract of *Hibiscus schizopetalus* (Mast) Hook. Journal of Pharmacognosy and Phytochemistry, 2014, 2(6).
- Bai S, Bharti P, Seasotiya L, Malik A, Dalal S. *In vitro* screening and evaluation of some Indian medicinal plants for their potential to inhibit Jack bean and bacterial ureases causing urinary infections. Pharmaceutical biology. 2015; 53(3):326-333.
- liakhat Ali S, Mabunni S, Mounica N, Kuldeep P, Kumar TJ. *In vitro* Urease Inhibitory Activity of Four Selected Medicinal Plant Extracts.
- Amin M, Anwar F, Naz F, Mehmood T, Saari N. Anti-*Helicobacter pylori* and urease inhibition activities of some traditional medicinal plants. Molecules. 2013; 18(2):2135-2149.
- Upadhyay LSB. Urease inhibitors: A review, 2012.
- Amin M, Anwar F, Janjua MRSA, Iqbal MA, Rashid U. Green synthesis of silver nanoparticles through reduction with *Solanum xanthocarpum* L. berry extract: characterization, antimicrobial and urease inhibitory activities against *Helicobacter pylori*. International Journal of Molecular Sciences, 2012; 13(8):9923-9941.
- Modolo LV, de Souza AX, Horta LP, Araujo DP, de Fatima A. An overview on the potential of natural products as ureases inhibitors: A review. Journal of Advanced Research. 2015; 6(1):35-44.
- Abid OUR, Babar TM, Ali FI, Ahmed S, Wadood A, Rama NH *et al.*, Identification of novel urease inhibitors by high-throughput virtual and *in vitro* screening. ACS medicinal chemistry letters, 2010; 1(4):145-149.
- Xiao ZP, Wang XD, Peng ZY, Huang S, Yang P, Li QS *et al.*, Molecular docking, kinetics study, and structure-activity relationship analysis of quercetin and its analogues as *Helicobacter pylori* urease inhibitors. Journal of agricultural and food chemistry. 2012; 60(42):10572-10577.
- Nilius M, Bode G, Lehnhardt G, Malfertheiner P. *In vitro* inhibition of *Helicobacter pylori* urease: biochemical and ultrastructural analysis. European journal of clinical investigation. 1991; 21(5):551-7.