

# Efficacy of Systemic Enzyme Therapy in Combating Post-Operative Wound Inflammation & Pain: An Indian Multicentre Experience

It has been well established that Systemic enzyme therapy (SET) aids better and faster healing when compared to usual anti-inflammatory drugs like non-steroidal anti-inflammatory drugs (NSAIDs) and opioid analgesics. Recently, SET with trypsin (serine protease), bromelain (cysteine protease) and rutoside (bioflavonoid) combination have gained popularity as a treatment for pain and inflammation.[1]

Given the above scenario, Bakhshi D et al. conducted a study to assess the impact of two formulations of Trypsin-Bromelain-Rutoside (TBR) against that of Serratiopeptidase on post-operative clinical markers of local (wound) inflammation. The findings revealed that Systemic enzyme therapy with Trypsin-Bromelain-Rutoside provided significantly better control and resolution of post-operative pain and inflammation compared to Serratiopeptidase.[2] The results of the same were published in the **European Journal of Pharmaceutical and Medical Research**.

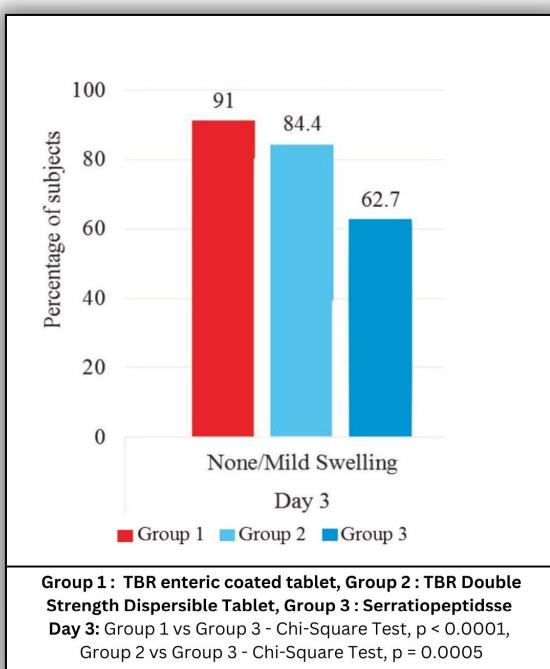
## Indian Evidence substantiating the efficacy of TBR[2]

A randomised, parallel-group, comparative, three-arm, multicentre, assessor-blind, active-controlled trial was conducted by Bakhshi D et al. The study included 100 patients who took Phlogam (enteric-coated TBR), 103 who took TBR Double Strength Dispersible Tablet, and 102 patients who took serratiopeptidase. 66, 27, and 7 subjects were put in the Phlogam (enteric-coated TBR) group who underwent general, dental, and orthopaedic surgery, respectively. 68, 27, and 8 subjects were placed in the TBR Double Strength Dispersible Tablet group who underwent general, dental, and orthopaedic surgery, respectively. 63, 26 and 13 subjects were put under the Serratiopeptidase group who underwent general, dental, and orthopaedic surgery, respectively.

The results were compared on day three and day eight post-surgery.

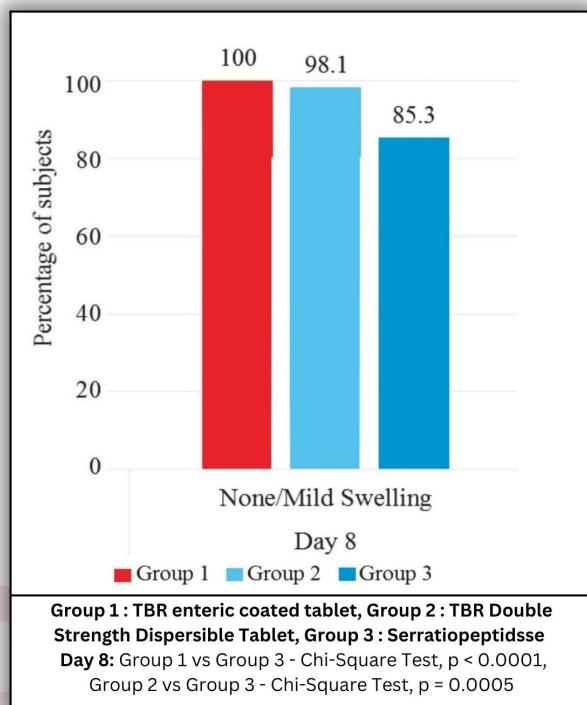
### Swelling Reduction:

- On day three after surgery, 91% of patients who took Phlogam (TBR Enteric Coated tablet) reported no/mild swelling. In comparison, 84.4% and 62.7% of those who took TBR Double Strength Dispersible Tablet and Serratiopeptidase reported no/ mild swelling, respectively.



Adapted from Systemic enzyme therapy with trypsin-bromelain-rutoside combination to counter post-operative wound inflammation – a randomised active-controlled multicentre trial, Bakhshi D et al., 2019, ejpmr 6(8), 493-500

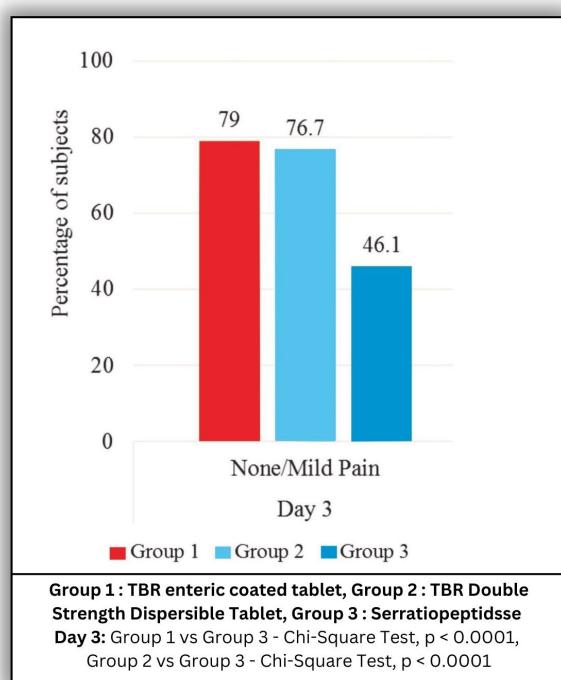
- On day eight after surgery, patients who took Phlogam (TBR Enteric Coated tablet) reported no/mild swelling. In contrast, 98.1% and 85.3% reported no/ mild swelling who took TBR Double Strength Dispersible Tablet and Serratiopeptidase, respectively.



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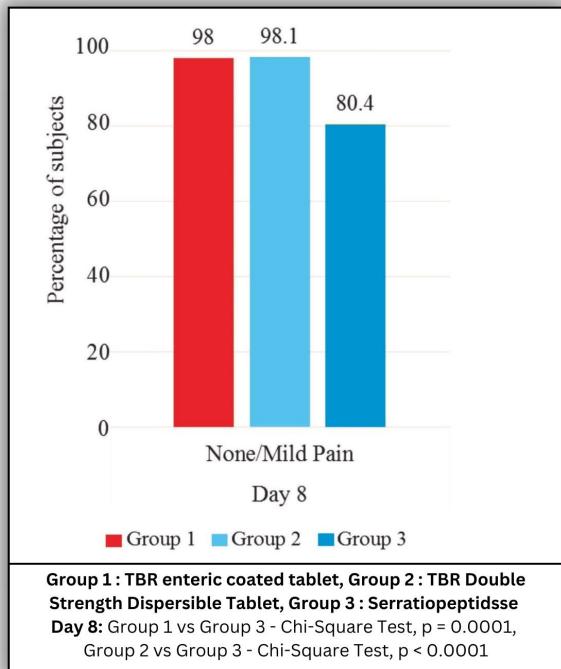
### Pain Relief:

- 79% of patients who took Phlogam (TBR Enteric Coated tablet) reported no/ mild pain. In comparison, 76.1% and 46.1% who took TBR Double Strength Dispersible Tablet and Serratiopeptidase, respectively, on 3rd day of post-surgery reported no/ mild pain.



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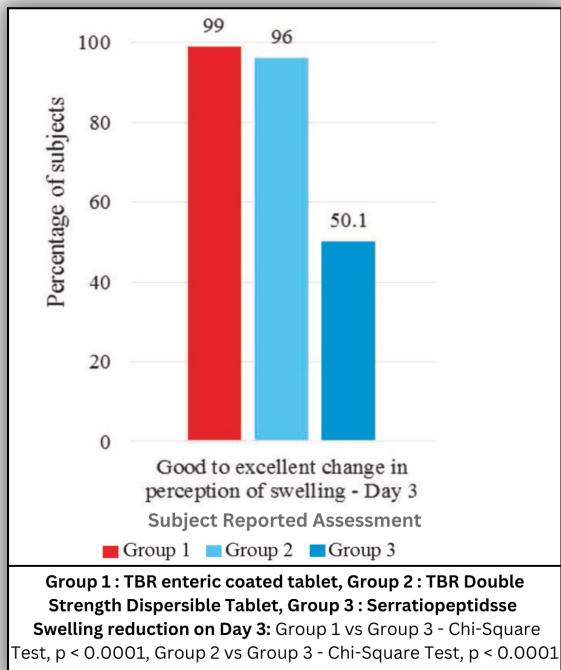
2. 98% of patients reported no/ mild pain who took Phlogam (TBR Enteric Coated tablet). In comparison, 98.1% and 80.4% reported no/ mild pain who took TBR Double Strength Dispersible Tablet and Serratiopeptidase, respectively, on the 8th day of post-surgery.



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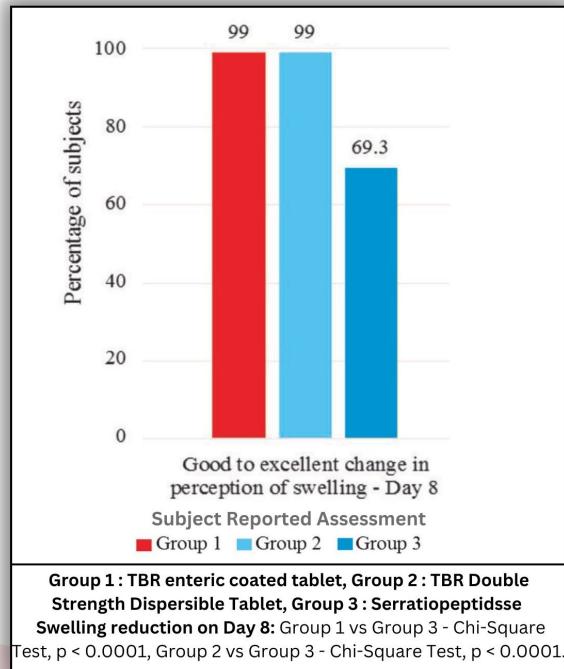
### Subject Reported Assessment of Swelling Reduction

1. On evaluating the patient-reported global assessment of swelling reduction rated between good to excellent, 99% of patients who took Phlogam (TBR Enteric Coated tablet) reported a good to an excellent change in perception of swelling on day 3. In comparison, 96% and 50% of patients who took TBR Double Strength Dispersible Tablet and Serratiopeptidase, respectively, reported a good to an excellent change in perception of swelling.



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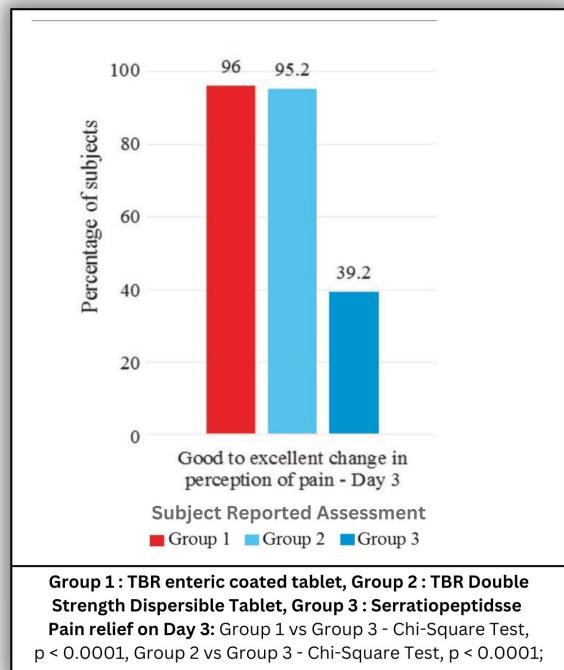
2. On evaluating the patient-reported global assessment of swelling reduction rated between good to excellent, 99% of patients who took Phlogam (TBR Enteric Coated tablet) reported a good to an excellent change in perception of swelling on day 8. In comparison, 99% and 69.3% of patients who took TBR Double Strength Dispersible Tablet and Serratiopeptidase reported a good to an excellent change in perception of swelling.



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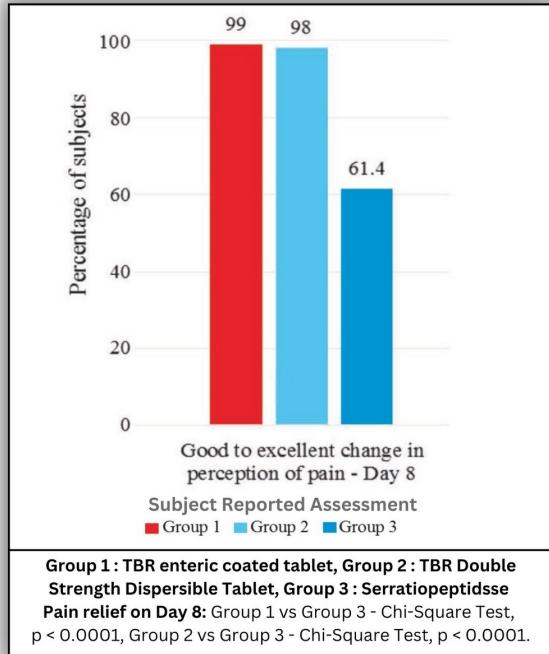
### Subject Reported Assessment of pain relief

1. Along the same lines, the patient reported global assessment of pain relief rated between good and excellent; 96% of patients who took Phlogam (TBR Enteric Coated tablet) reported a good to an excellent change in perception of pain relief on day 3, while 95.2% and 39.2% of patients reported a good to an excellent change in perception of pain who took TBR Double Strength Dispersible Tablet and Serratiopeptidase, respectively.



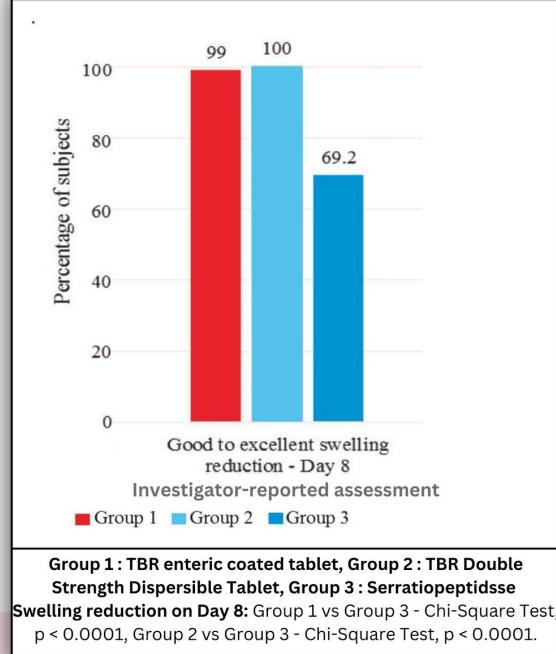
Adapted from Systemic enzyme therapy with trypsin-bromelain-rutoside combination to counter post-operative wound inflammation – a randomised active-controlled multicentre trial, Bakhshi D et al, 2019, ejpmr 6(8), 493-500

2. Similarly, the patient reported global assessment of pain relief rated between good and excellent; 99% of patients who took Phlogam (TBR Enteric Coated tablet) reported a good to an excellent change in perception of pain relief on day 8, while 98% and 61.4% of patients reported a good to an excellent change in perception of pain who took TBR Double Strength Dispersible Tablet and Serratiopeptidase, respectively.



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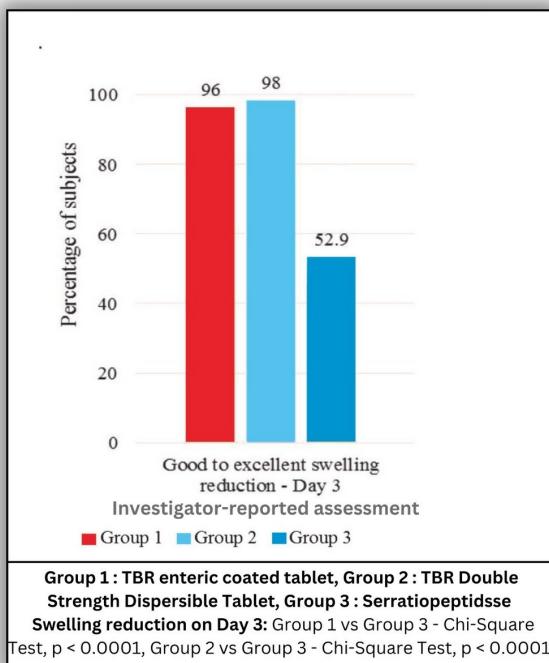
2. On evaluating the investigator-reported assessment of swelling reduction rated between good to excellent, 99% of patients who took Phlogam (TBR Enteric Coated tablet) reported a good to an excellent change in perception of swelling on day 8. In comparison, 100% and 69.2% of patients who took TBR Double Strength Dispersible Tablet and Serratiopeptidase, respectively, reported a good to an excellent change in perception of swelling.



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### Investigator Reported Assessment of Swelling Reduction

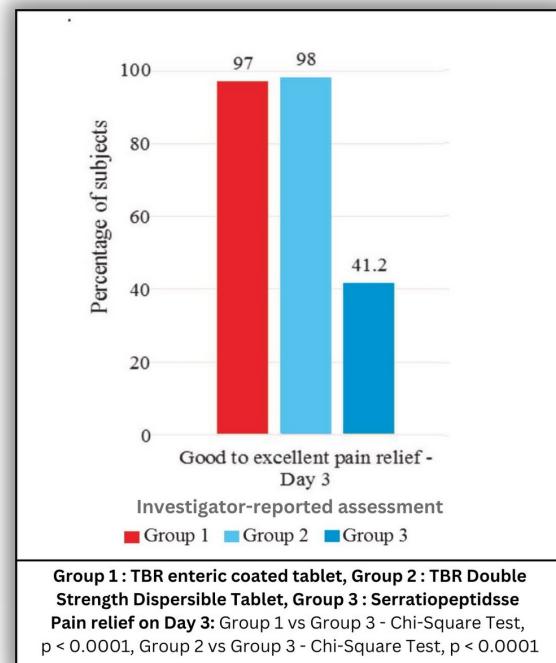
1. On evaluating the investigator-reported assessment of swelling reduction rated between good to excellent, 96% of patients who took Phlogam (TBR Enteric Coated tablet) reported a good to an excellent change in perception of swelling on day 3. In comparison, 98% and 52.9% of patients who took TBR Double Strength Dispersible Tablet and Serratiopeptidase, respectively, reported a good to an excellent change in perception of swelling



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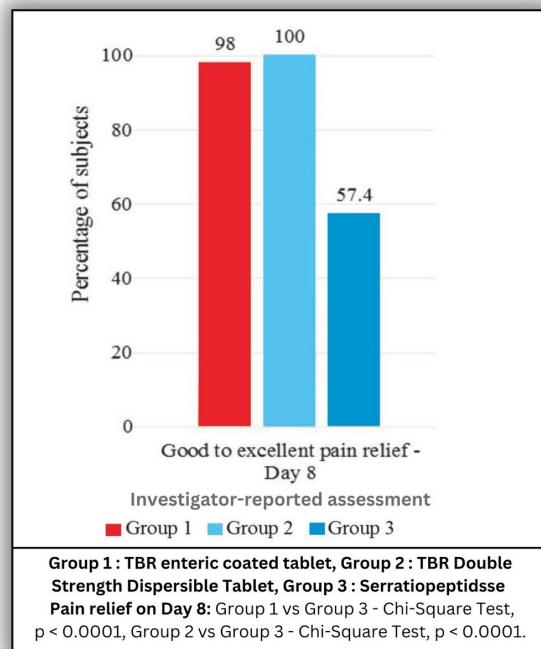
### Investigator Reported Assessment of Pain Relief

1. Likewise, the investigator reported global assessment of pain relief rated between good and excellent; 97% of patients who took Phlogam (TBR Enteric Coated tablet) reported a good to an excellent change in perception of pain relief on day 3, while 98% and 41.2% of patients reported a good to an excellent change in perception of pain who took TBR Double Strength Dispersible Tablet and Serratiopeptidase, respectively.



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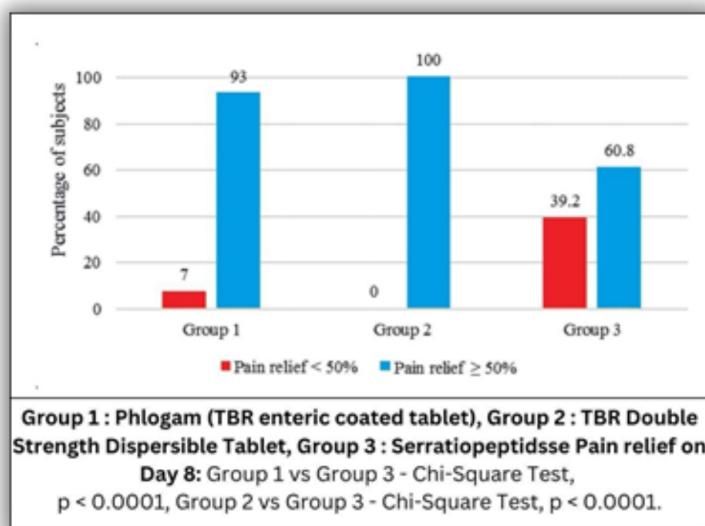
2. Along the same lines, the investigator reported global assessment of pain relief rated between good and excellent; 98% of patients who took Phlogam (TBR Enteric Coated tablet) reported a good to an excellent change in perception of pain relief on day 8, while 100% and 57.4% of patients reported a good to an excellent change in perception of pain who took TBR Double Strength Dispersible Tablet and Serratiopeptidase, respectively.



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### Total Pain Relief in the First 8 hours

93% of patients achieved at least 50% of total pain relief in the first 8 hours who took Phlogam (TBR Enteric Coated tablet), while 100% and 60.8% achieved at least 50% of total pain relief in the first 8 hours who took TBR Double Strength Dispersible Tablet and Serratiopeptidase, respectively.



It was concluded that compared to Serratiopeptidase, SET with Trypsin-Bromelain-Rutoside significantly improved postoperative pain control and pain resolution among Indian post-operative patients undergoing different surgical interventions.

### Key Message:

Inflammation is an inevitable process of the injured body tissues so as an attempt to restore homeostasis and facilitate healing. Patients' sufferings, such as pain and swelling, arise if the inflammatory responses are prolonged and exaggerated, thus halting wound repair. Employment of anti-inflammatory enzymes like the combination of trypsin, bromelain and rutoside have shown promising results in pain alleviation by modulating the inflammatory cascade and could be considered to be used as a primary choice in clinical settings.



Rx **Phlogam**®

Trypsin 48 mg + Bromelain 90 mg + Rutoside 100 mg Tablets

### References

- Tiwari S, Khemnar BM, John J, Divekar GH. Trypsin, bromelain and rutoside in dental pathologies—synergistic action and qualitative metanalysis of investigator-initiated studies. *Int J Sci Rep* 2022;8(10):308-12.
- D Bakhshi, Tiwari, Prajapati, Rudrappa, Uppin, Vinchhi, Dhorepatil, Dhusia, Daftry, Divekar, John, & Wadivkar. (2019, July 16). Systemic enzyme therapy with trypsin-bromelain-rutoside combination to counter post-operative wound inflammation – a randomised active-controlled multicentre trial. *European journal of pharmaceutical and medical research*, 493-500. <https://www.ejpmr.com>