

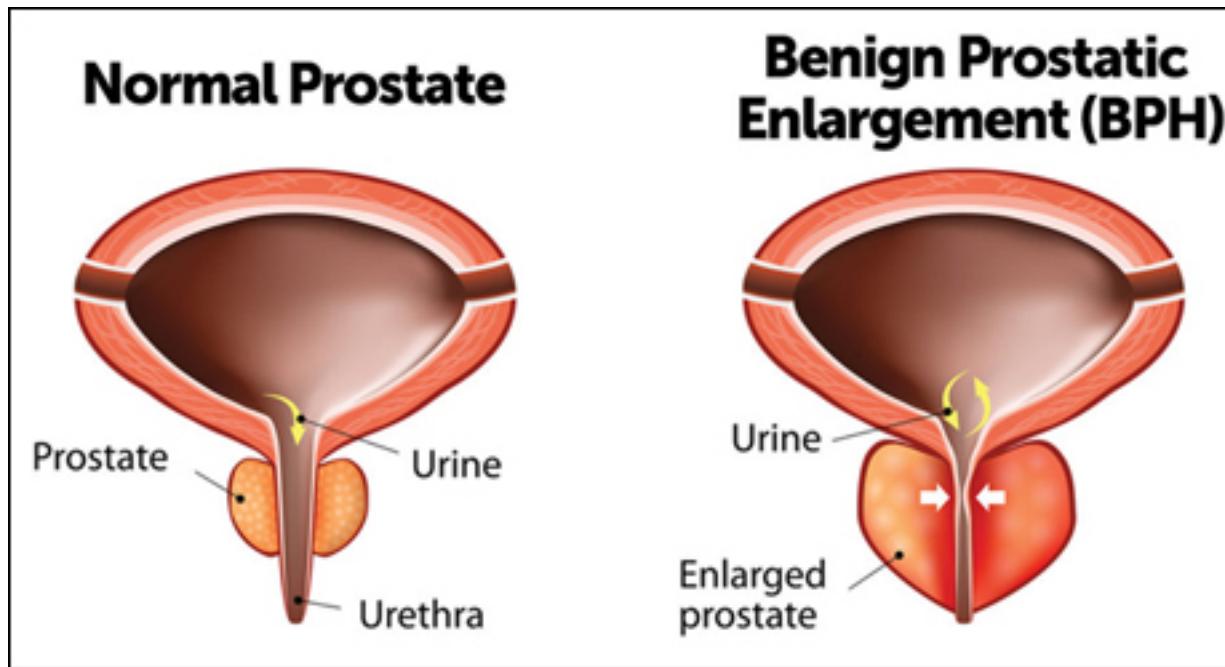
# Primo Simposio Nazionale sulla Nutraceutica in Urologia

**ROVIGO - 16/17 FEBBRAIO 2018**

**EFFETTI DI VARI ESTRATTI NATURALI IN UN  
MODELLO  
SPERIMENTALE DI IPERTROFIA PROSTATICA  
BENIGNA**

*Irene Paterniti, Salvatore Cuzzocrea*

**Benign prostatic hyperplasia (BPH)** refers to nonmalignant growth of prostate. age-related phenomenon in nearly all men, starting at approx 40 years of age.



#### Histologically

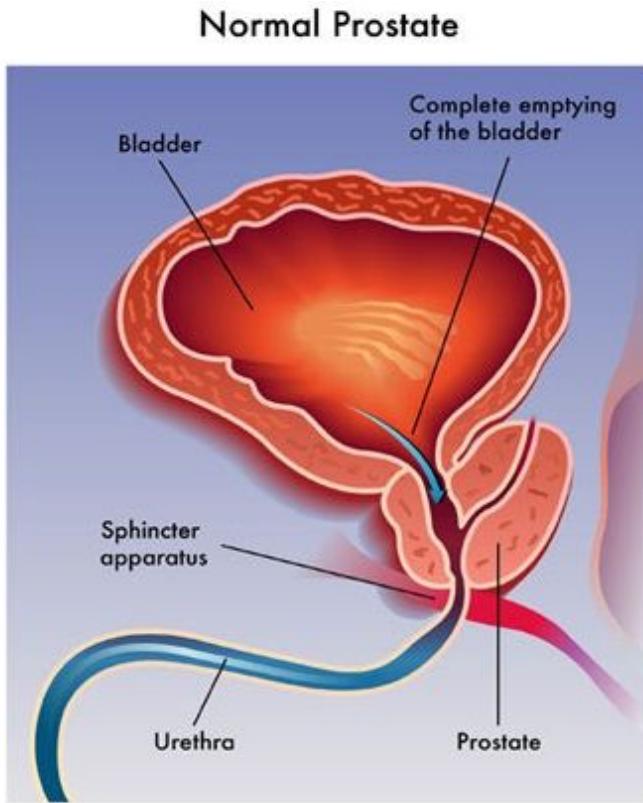
10% of men in their 30s  
20% in 40s  
50-60% in 60s  
80-90% in their 70s and 80s.

#### Prostate size increases from

25g to 30g for men in 40s  
30g to 40g in 50s  
35g to 45g in 60s.

# Symptoms

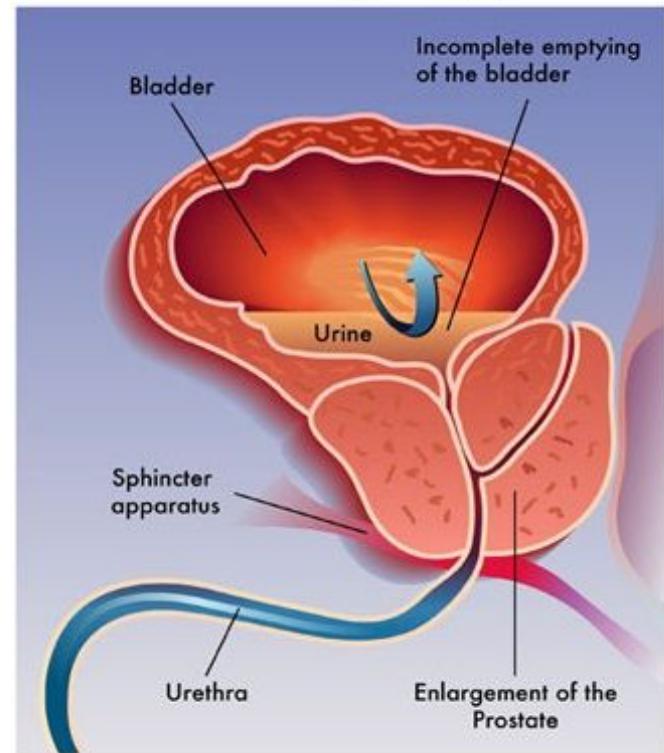
- Hyperplasia of epithelial and stromal components of prostate
- Progressive obstruction of urinary outflow
- Increased activity of detrusor muscle



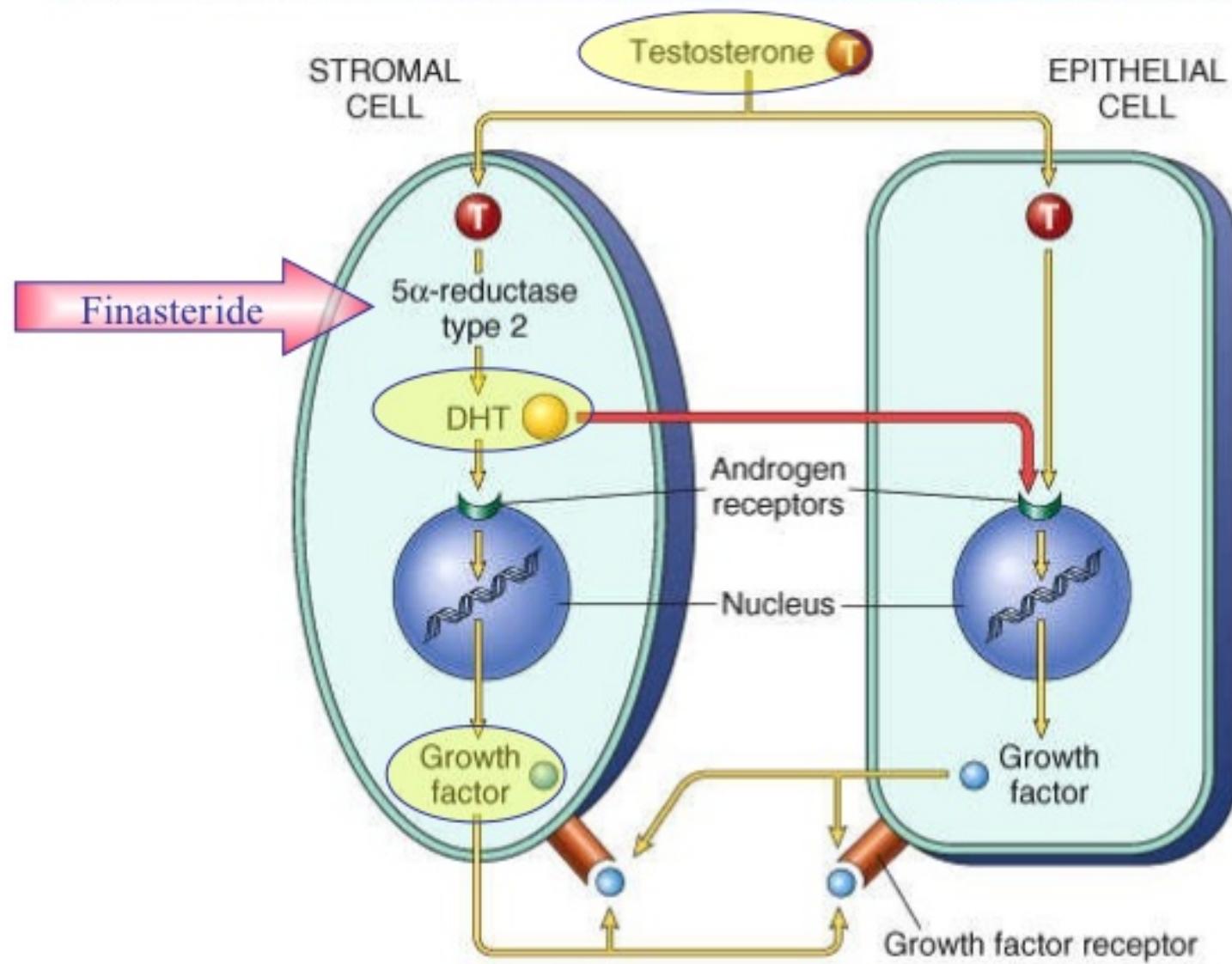
# Causes

- Frequency, nocturia
- Poor flow , intermittent stream
- Hesitation, terminal dribbling

## Prostatic Hypertrophy



# Patho-Physiology: Testosterone → DHT → GF



# Potential risk factors predisposing to the development of prostate inflammation and their promoting effects on prostate cancer initiation and progression.

Dietary and

Genetic

BPG is committed to discovery and dissemination of knowledge



*World Journal of  
Clinical Oncology*

Review

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World J Clin Oncol. Feb 10, 2013; 4(1): 4-13

Published online Feb 10, 2013. doi: [10.5306/wjco.v4.i1.4](https://doi.org/10.5306/wjco.v4.i1.4)

## Development of animal models underlining mechanistic connections between prostate inflammation and cancer

Murielle Mimeaule, Surinder K Batra

Initiation, progression  
and metastases ↑

Paola Lucia Minciullo<sup>a</sup>  
Antonino Inferrera<sup>b</sup>  
Michele Navarra<sup>c</sup>  
Gioacchino Calapai<sup>d</sup>  
Carlo Magno<sup>b</sup>  
Sebastiano Gangemi<sup>a, e</sup>

<sup>a</sup>Operative Unit of Allergy and Clinical Immunology, Department of Clinical and Experimental Medicine,

<sup>b</sup>Operative Unit of Urology, Department of Human Pathology, <sup>c</sup>Department of Drug Sciences and Products for Health, <sup>d</sup>Department of Clinical and Experimental Medicine, University of Messina, and <sup>e</sup>Institute of Clinical Physiology, IFC CNR, Messina Unit, Messina, Italy

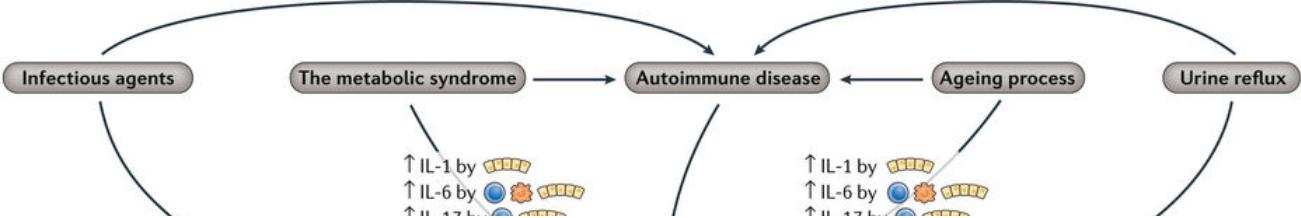
## Oxidative Stress in Benign Prostatic Hyperplasia: A Systematic Review

REVIEW



## Correlation between benign prostatic hyperplasia and inflammation

*Yakup Bostancı<sup>a</sup>, Amir Kazzazi<sup>a</sup>, Shabnam Momtahen<sup>b</sup>, Juliana Laze<sup>a</sup>, and Bob Djavan<sup>a</sup>*



**The central role of  
chronic prostate  
inflammation in the**

## REVIEWS

# Inflammatory mediators in the development and progression of benign prostatic hyperplasia

*Cosimo De Nunzio, Fabrizio Presicce and Andrea Tubaro*

NATURE REVIEWS | UROLOGY

VOLUME 13 | OCTOBER 2016 | 613



# Phytotherapy

Mini Rev Med Chem. 2014;14(3):257-70.

## An overview of phytotherapeutic approaches for the treatment of benign prostatic hyperplasia.

Aggarwal S, Verma A, Shukla R, Batra S, Bhardwaj TR, Kumar M<sup>1</sup>.

with BPH is common, e.g. *Serenoa Repens*, *Pygeum africanum*, etc.

Can J Urol. 2015 Oct;22 Suppl 1:18-23.

## Complementary and alternative medications for benign prostatic hyperplasia.

Keehn A<sup>1</sup>, Lowe FC.

### EXTRACTS

#### 1. Inhibition of 5 $\alpha$ -reductase

J Altern Complement Med. 2017 Aug;23(8):599-606. doi: 10.1089/acm.2016.0302. Epub 2017 Apr 24.

## Serenoa repens for Lower Urinary Tract Symptoms/Benign Prostatic Hyperplasia: Current Evidence and Its Clinical Implications in Naturopathic Medicine.

Ooi SL<sup>1</sup>, Pak SC<sup>2</sup>.

#### 5. Decrease of sex hormone-binding globulin

#### 6. Action on $\alpha$ -adrenergic receptors

#### 7. Free radical scavenger



REVIEW ARTICLE

# Pre-clinical evidence and clinical translation of benign prostatic hyperplasia treatment by the vitamin D receptor agonist BXL-628 (Elocalcitol)

M. Maggi<sup>1</sup>, C. Crescioli<sup>1</sup>, A. Morelli<sup>1</sup>, E. Colli<sup>2</sup>, and L. Adorini<sup>2</sup>

<sup>1</sup>Department of Clinical Physiopathology, Center of Research, Transfer and High Education (DENOTHE), University of Florence, Florence; <sup>2</sup>BioXell, Milan, Italy

Pharmacology. 2003 Oct;69(2):79-87.

## Characterization of the effect of Epilobium extracts on human cell proliferation.

Vitalone A<sup>1</sup>, McColl J, Thome D, Costa LG, Tita B.



To investigate the biological  
effect of different plant  
extracts preparations in an *in*  
*vivo* model of BPH as new  
therapeutic target

# *In vivo*-Experimental design



Male rats

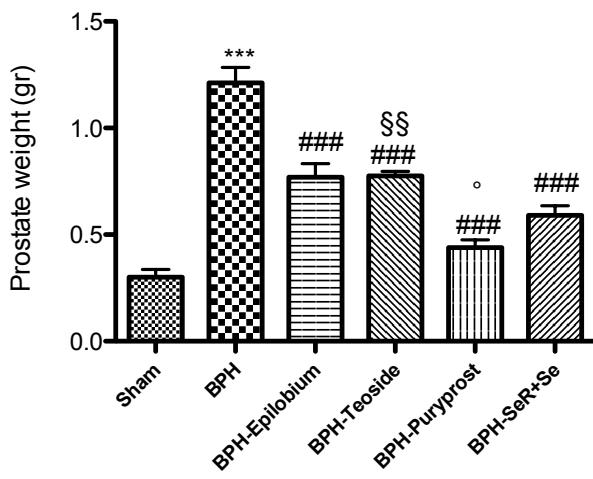
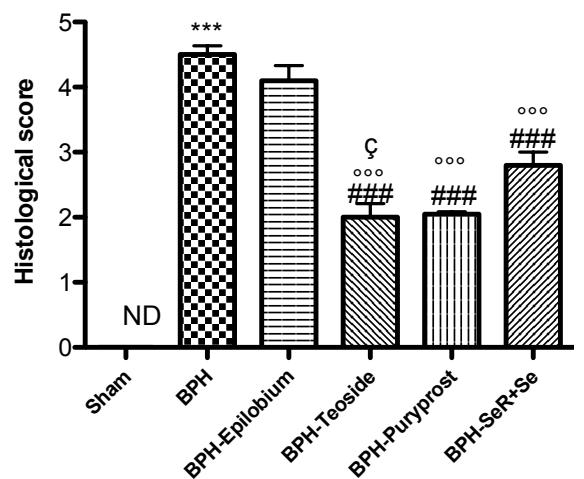
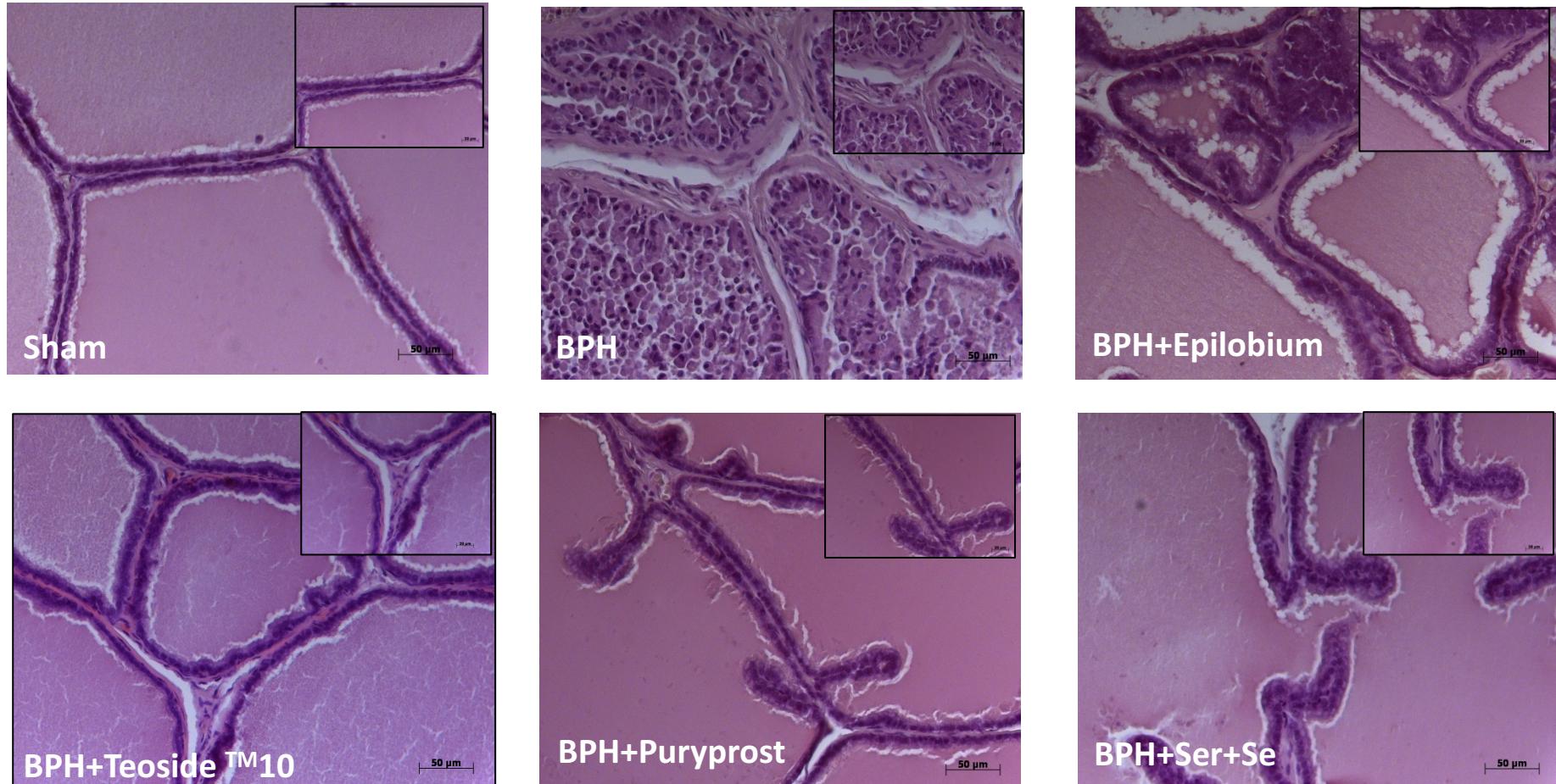
BPH induction

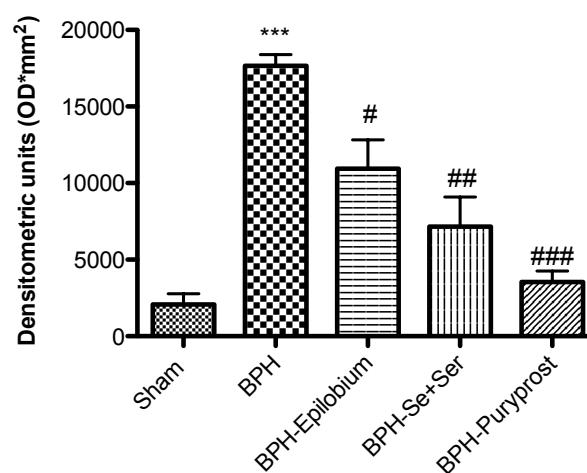
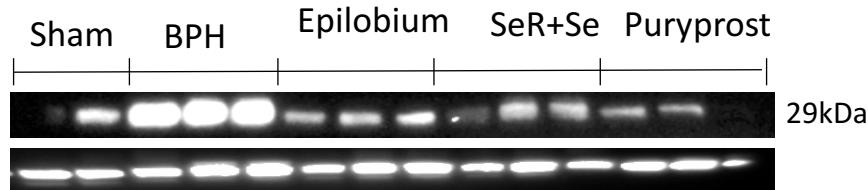
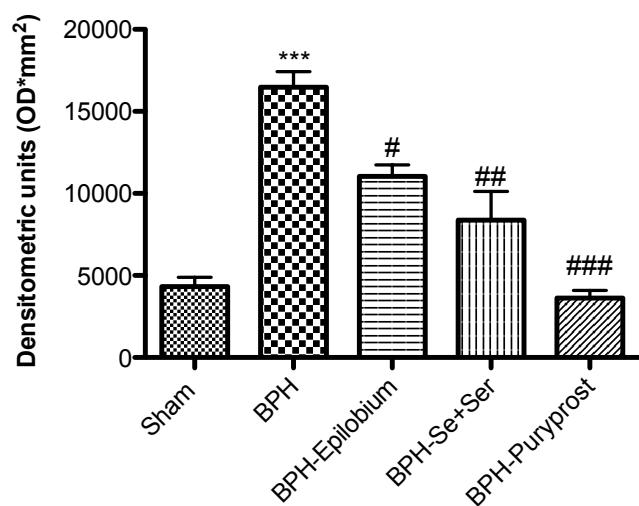
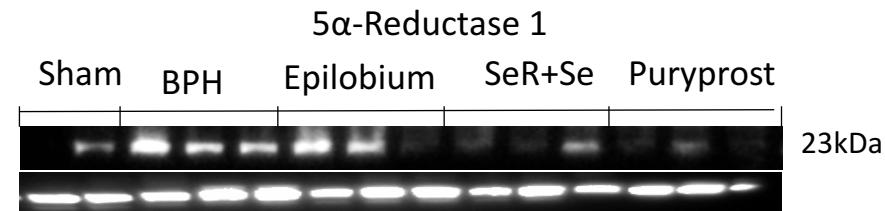
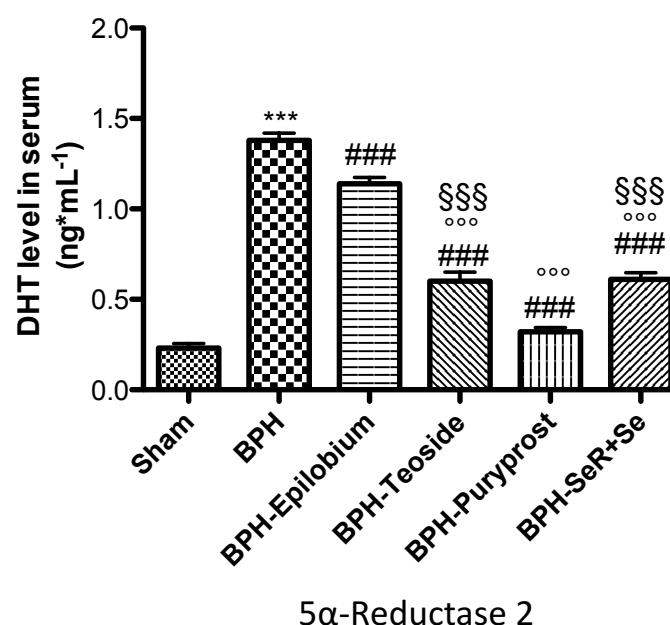
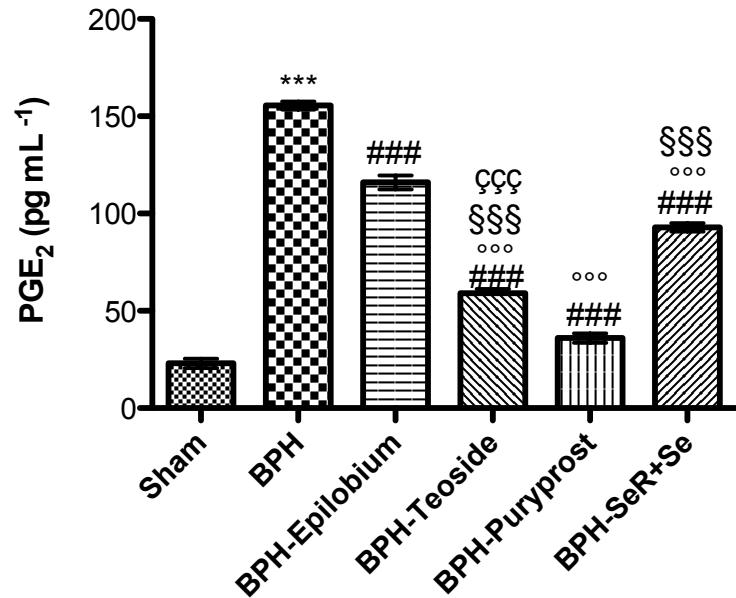
Testosterone propionate  
3mg/kg s.c. (100 µl)

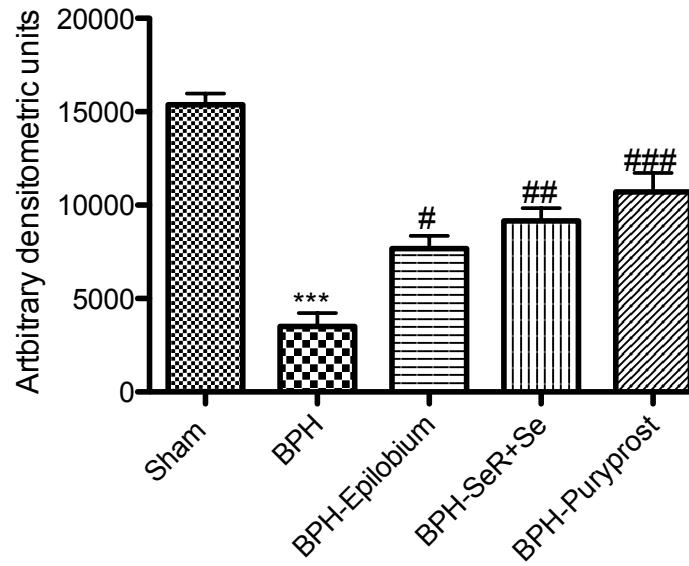
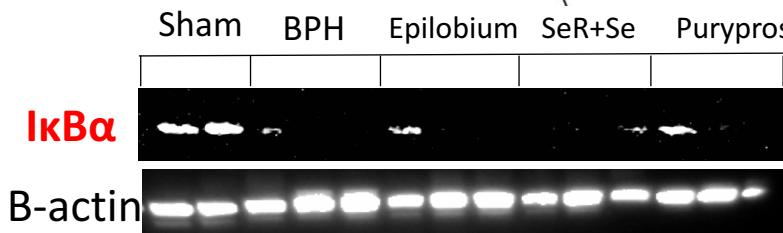
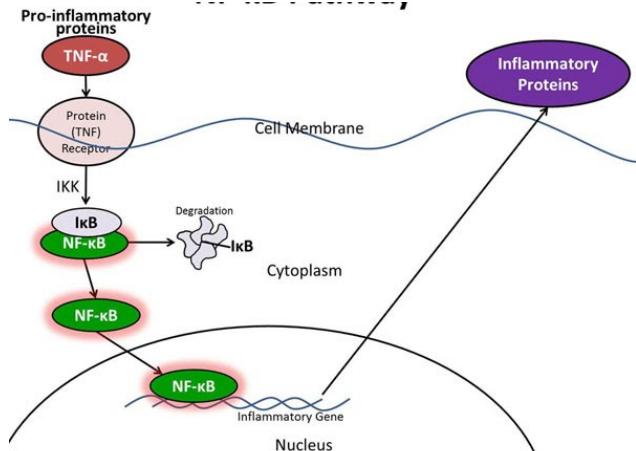


## **Treatment:**

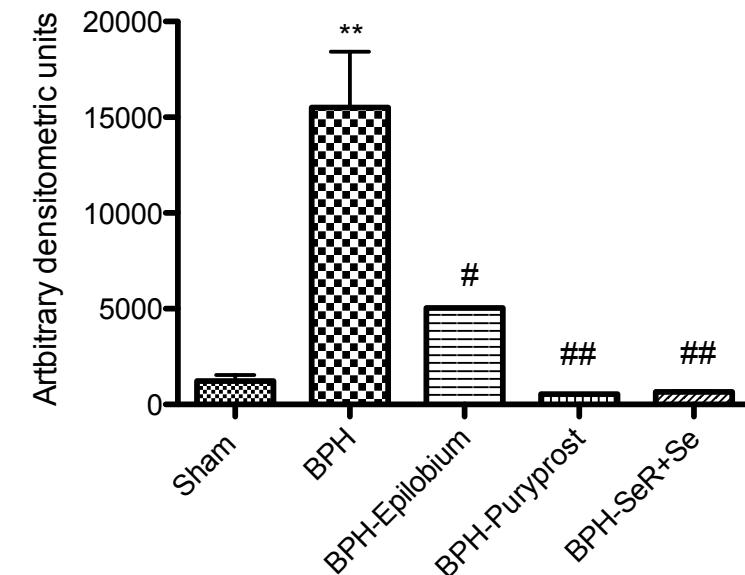
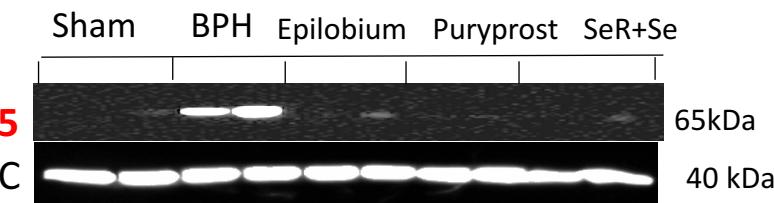
- **BPH-TEOSIDE™ 10 group:** containing Teupolioside (2 mg/kg in a volume of 250 µl) orally every day until for 14 days;
- **BPH-Epilobium group:** Epilobium (12 mg/kg) orally every day until for 14 days;
- **BPH-SeR (*Serenoa Repens*)+Se (*Serenoa*) group: SeR (28.5 mg/kg) and Se (0.005 mg/kg)** orally every day until for 14 days.
- **BPH-Puryprost® group (*IsoTeoictina®*):** Puryprost (14 mg/kg containing teupolioside 50% 2 mg/kg and Epilobium 12 mg/kg) orally every day until for 14 days;



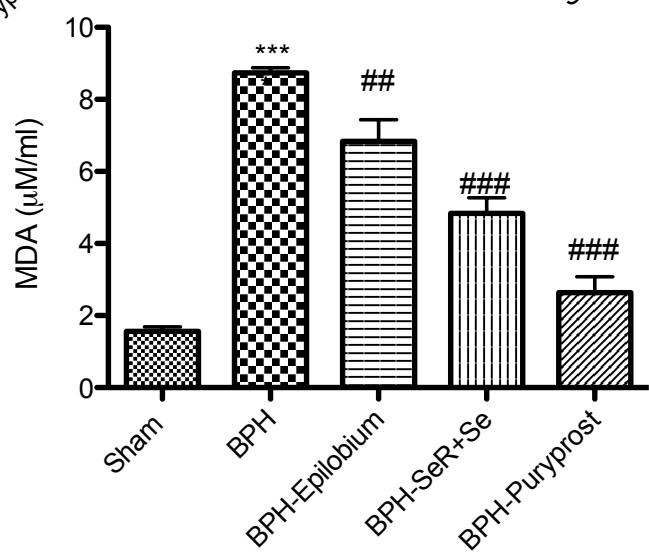
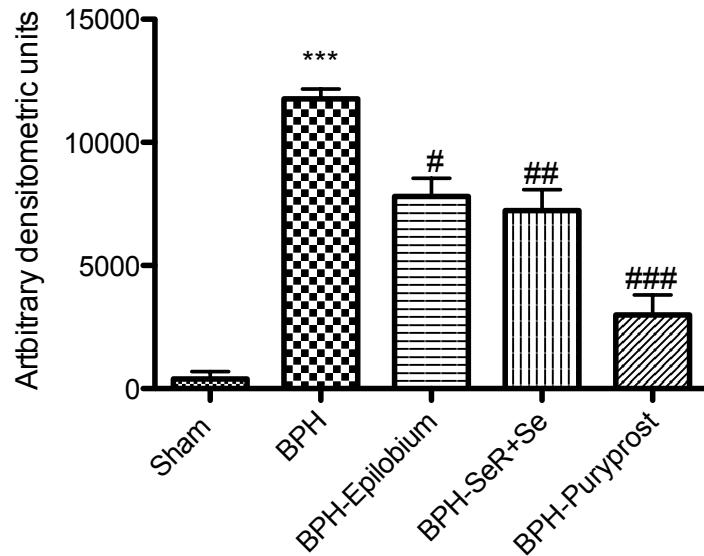
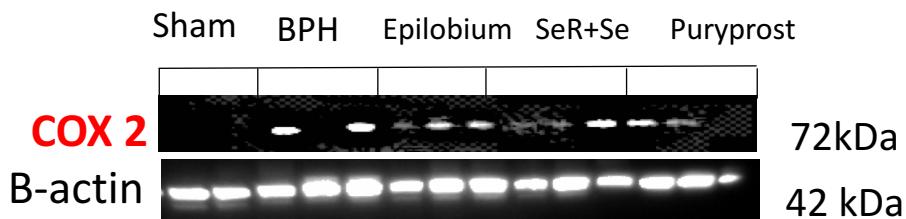
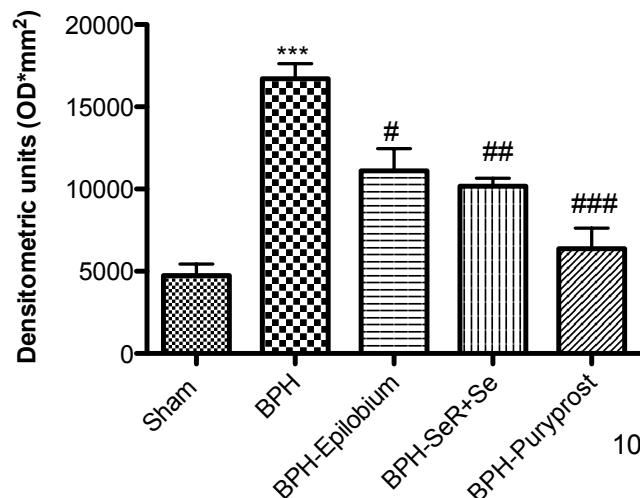
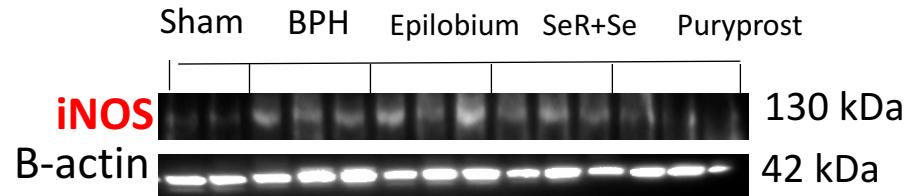




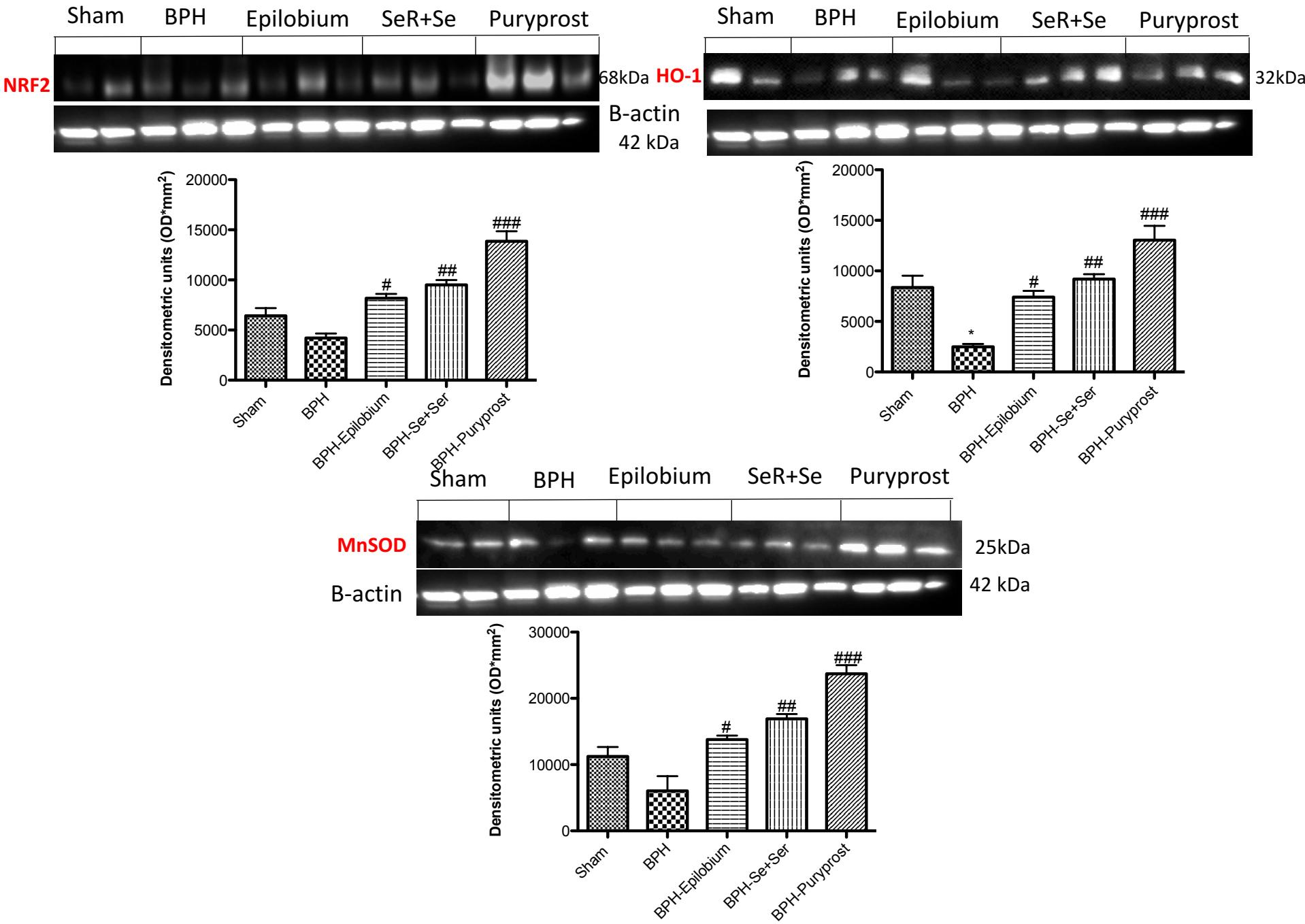
## Effect of Epilobium, SeR+Se and Puryprost On NF- $\kappa$ B pathway



# Effect of Epilobium, SeR+Se and Puryprost on iNOS and COX2

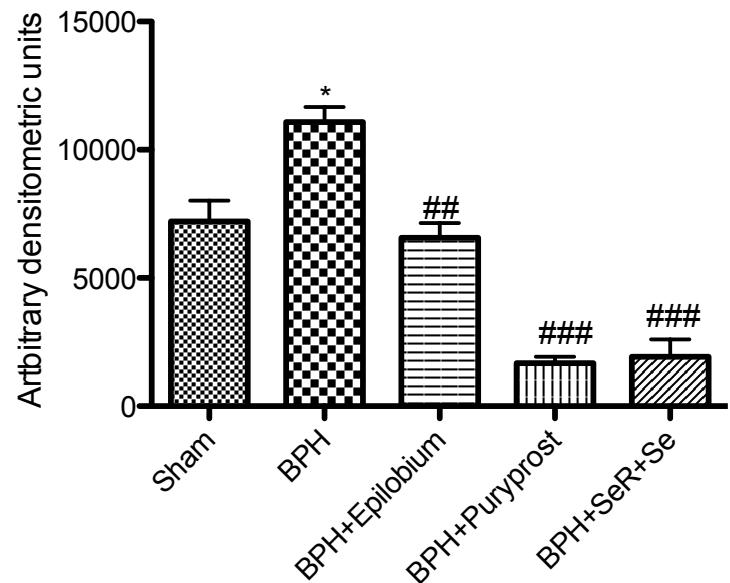
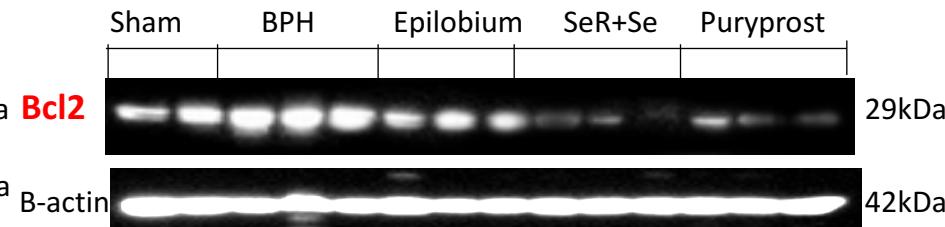
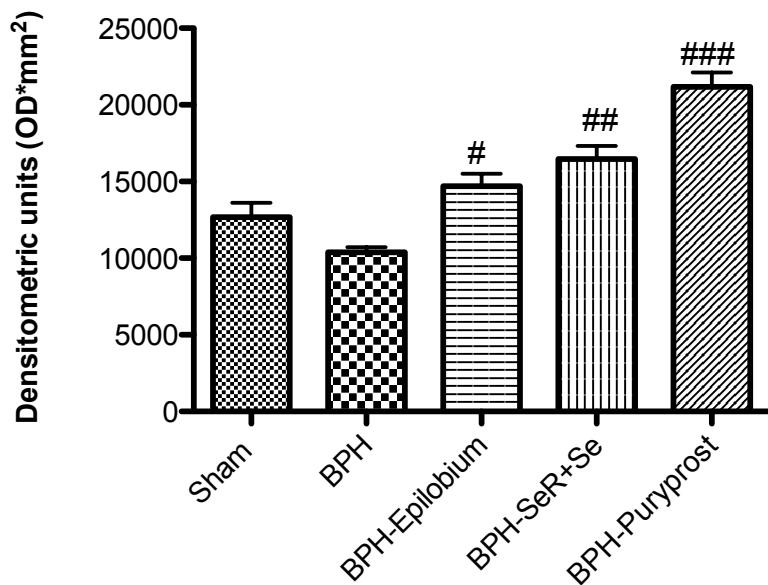
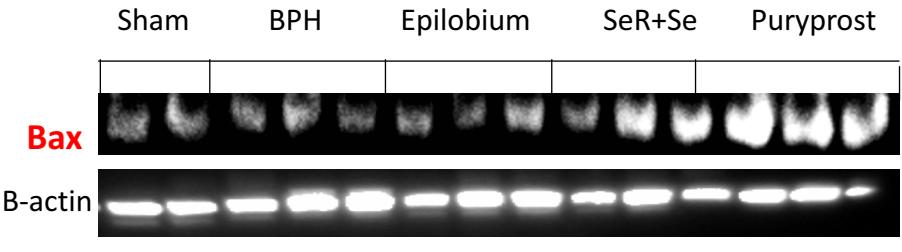


# Anti-oxidant effect

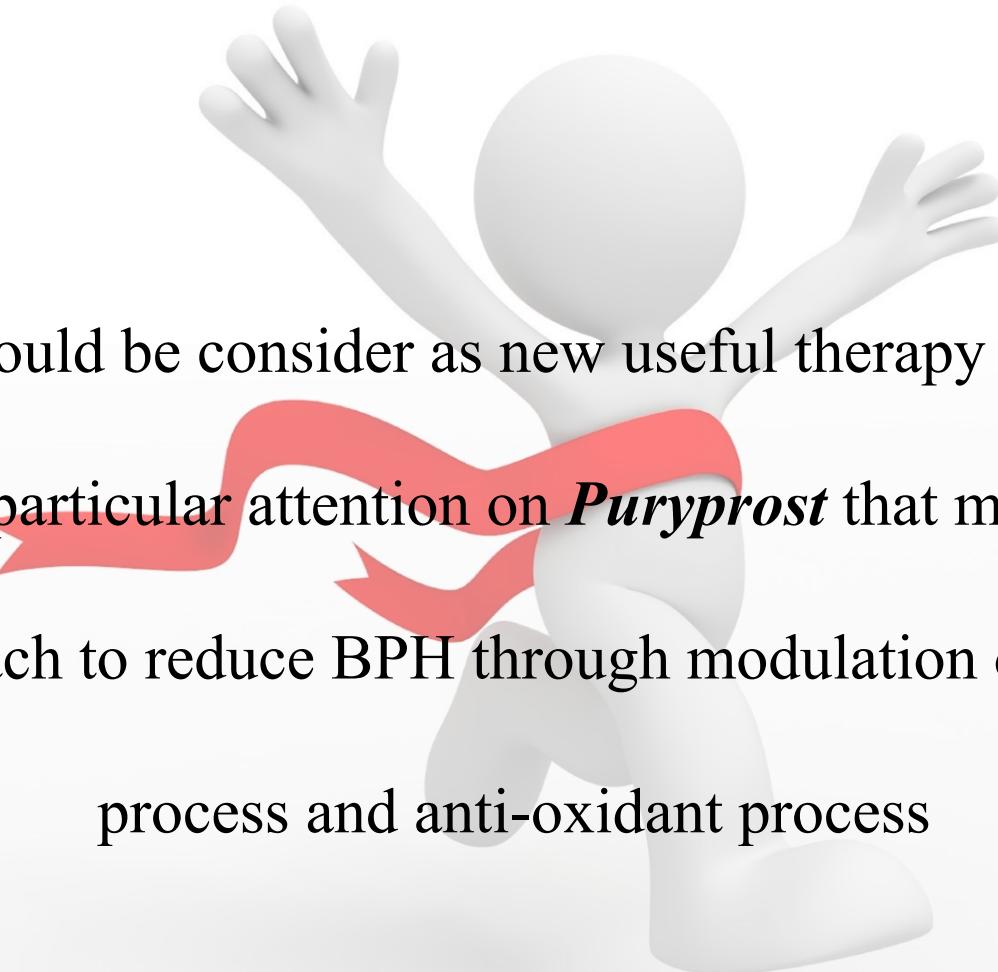


# Epilobium, Puryprost and SeR+Se treatments

modulates apoptosis pathways



# Conclusion



Plant extract could be consider as new useful therapy in the treatment of BPH, with particular attention on *Puryprost* that might represent a rational approach to reduce BPH through modulation of inflammatory process and anti-oxidant process

# Grazie per l'attenzione

