

**THE EFFECT OF EXTRACT
YELLOW PUMPKINS SEED (*CUCURBITA
MOSCHATA*)
ON HISTOLOGY OF ENDOMETRIAL
GLANDS IN OVARIECTOMIZED RATS**

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Background

- Menopause is defined as the final/last menstrual period
- Menopause is a natural and inevitable event that happens on average at age 51 in white Caucasians, with ethnic and regional variations
- These symptoms are triggered by the decrease of estrogen produced by ovaries

Consequences of oestrogen loss

Symptoms
(early)

Hot flushes
Insomnia
Irritability
Mood disturbances

Physical changes
(intermediate)

Vaginal atrophy
Stress (urinary) incontinence
Skin atrophy

Diseases
(late)

Osteoporosis
Cardiovascular disease
Dementia of the Alzheimer's type
Cancers



Background

- Menopausal symptoms turn out to be a health problem threatening the quality of women's lives
- Women exposed to long-term use of HRT are also exposed to its identified malicious side effect, the increasing risk of ovarian and endometrial malignancies (Manson & Martin, 2001).
- It is advised for menopausal women to wisely resorting to an existing alternative treatment, phytoestrogen therapy, as it is proven to be safer (Rimoldi et al.,2007).

The Phytoestrogens

- Phytoestrogens are substances of plant origin that are structurally and functionally similar to the estrogens.
- Phytoestrogens are also promoted as being an estrogen agonist, because they can occupy estrogen receptors (Savitri et al, 2009).
- There are four main types of groups of phytoestrogen in plants such as flavonoids, coumestan, lignans, and stilbene. (Whitten & Pattisaul, 2001 *cit.* Sitasiw, 2009).



Pumpkin (*Cucurbita moschata*)



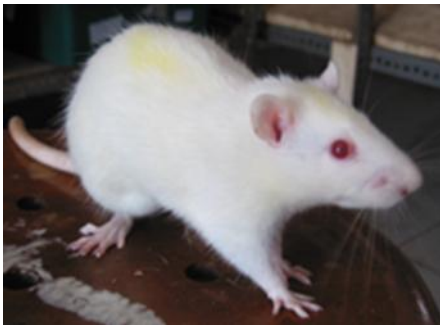
- According to Li et al. (2009), phenolic glycoside compounds found in the seeds of *C. moschata*
- Glycosides of phenolic compounds in the seeds of *C. moschata* are one of isoflavone derivatives (Koike et al., 2005).
- Phillips et al. (2005) mention that pumpkin seeds contain 265 mg of phytoestrogen in 100 grams of seeds.
- Pumpkin seeds also contain secoisolariciresinol which is a lignin compound (Sicilia et al., 2003). Lignan is one of the main classes of phytoestrogens agent (Cornwell et al., 2004).

The purpose of this study

- To analyze the effects of *C. moschata* seeds in ovariectomized rats on the histology of endometrial glands.

Material and Methods

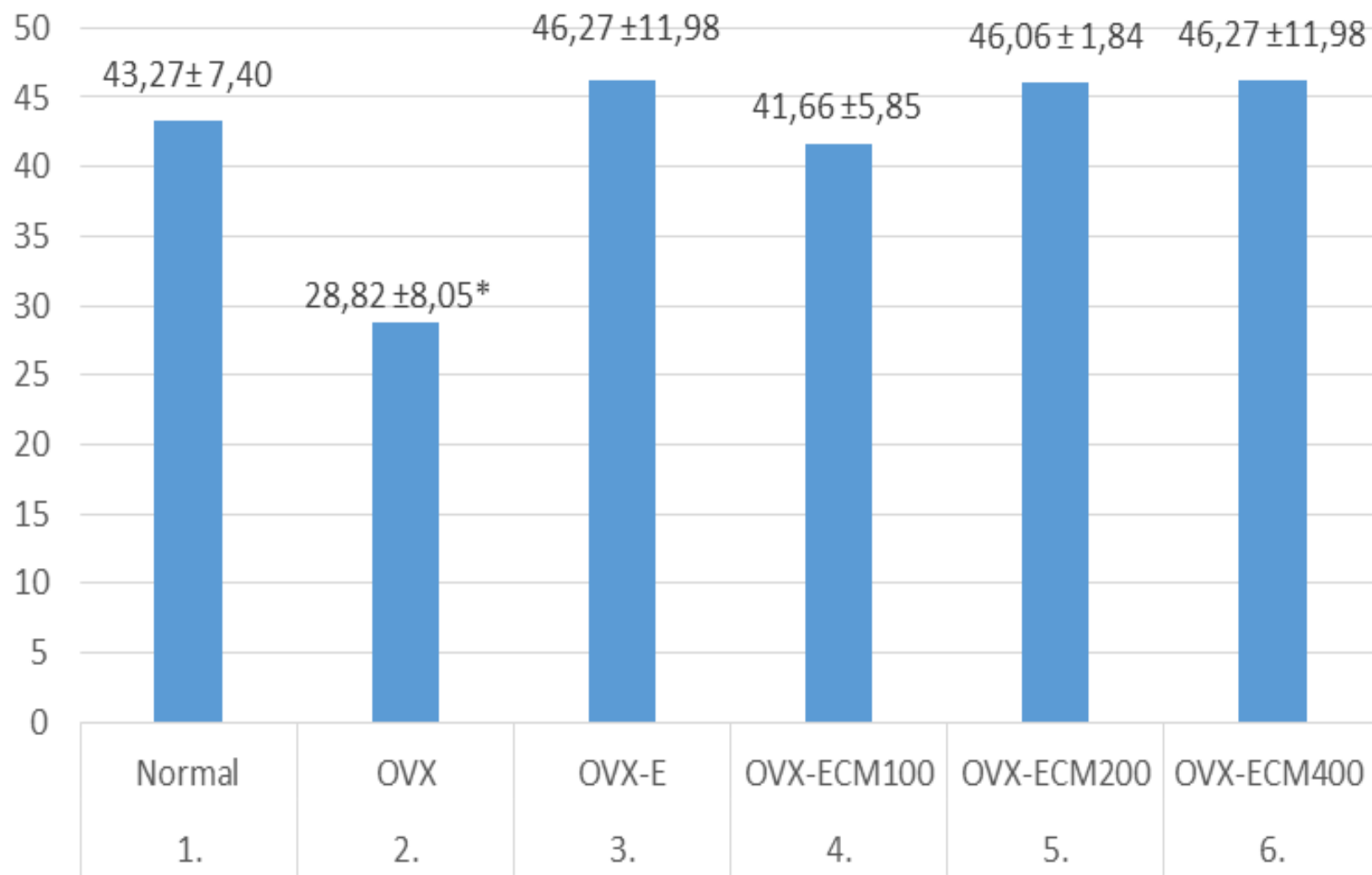
- This study using the An experimental study in vivo with only post-test with control group design
- Using 30 female Spraque-Dawley rats, 8 weeks old, weight 148-280 g.
- The rats were divided into 6 groups (each group consist of 5 rats)
 - control group (Normal)
 - only ovariectomized group (OVX)
 - ovariectomized rats ang given the extract of *C.moschata* 100, CM 200 and CM 400 mg / kg body weight for 30 days (OVX-CM100; OVX-CM200; OVX-CM400),
 - ovariectomized rats given estradiol 2 $\mu\text{g}/\text{kg}$ as a positive control (OVX-E).
- Analysis on the number of endometrial glands, diameter of lumen's glands, and the thickness of the endometrial glandular epithelium was carried out.
- Statistical Analysis was using One Way ANOVA.



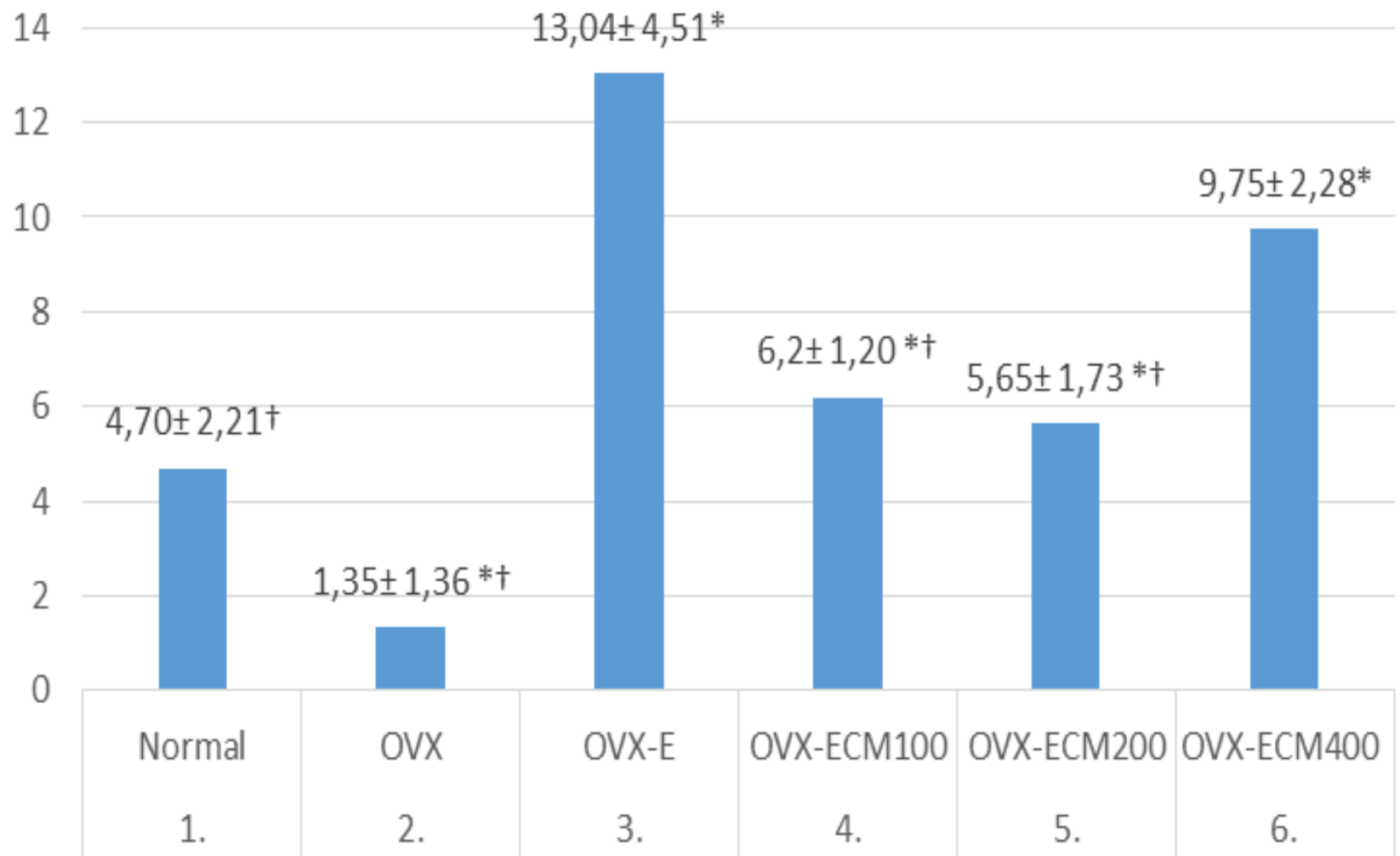
The Result

The group of treatment		Diameter of lumen's glands (mean ± SEM)	Epithelial height of endometrial glands (mean ± SEM)	Number of endometrial glands (mean ± SEM)
1.	Normal	43,27± 7,40	13,90± 1,58	4,70± 2,21 [†]
2.	OVX	28,82 ±8,05*	11,45± 3,36	1,35± 1,36 * [†]
3.	OVX-E	46,27 ±11,98	14,03± 0,67	13,04± 4,51*
4.	OVX-ECM100	41,66 ±5,85	14,42± 1,91	6,2± 1,20 * [†]
5.	OVX-ECM200	46,06 ± 1,84	14,85± 1,49	5,65± 1,73 * [†]
6.	OVX-ECM400	46,27 ±11,98	14,77± 1,71	9,75± 2,28*

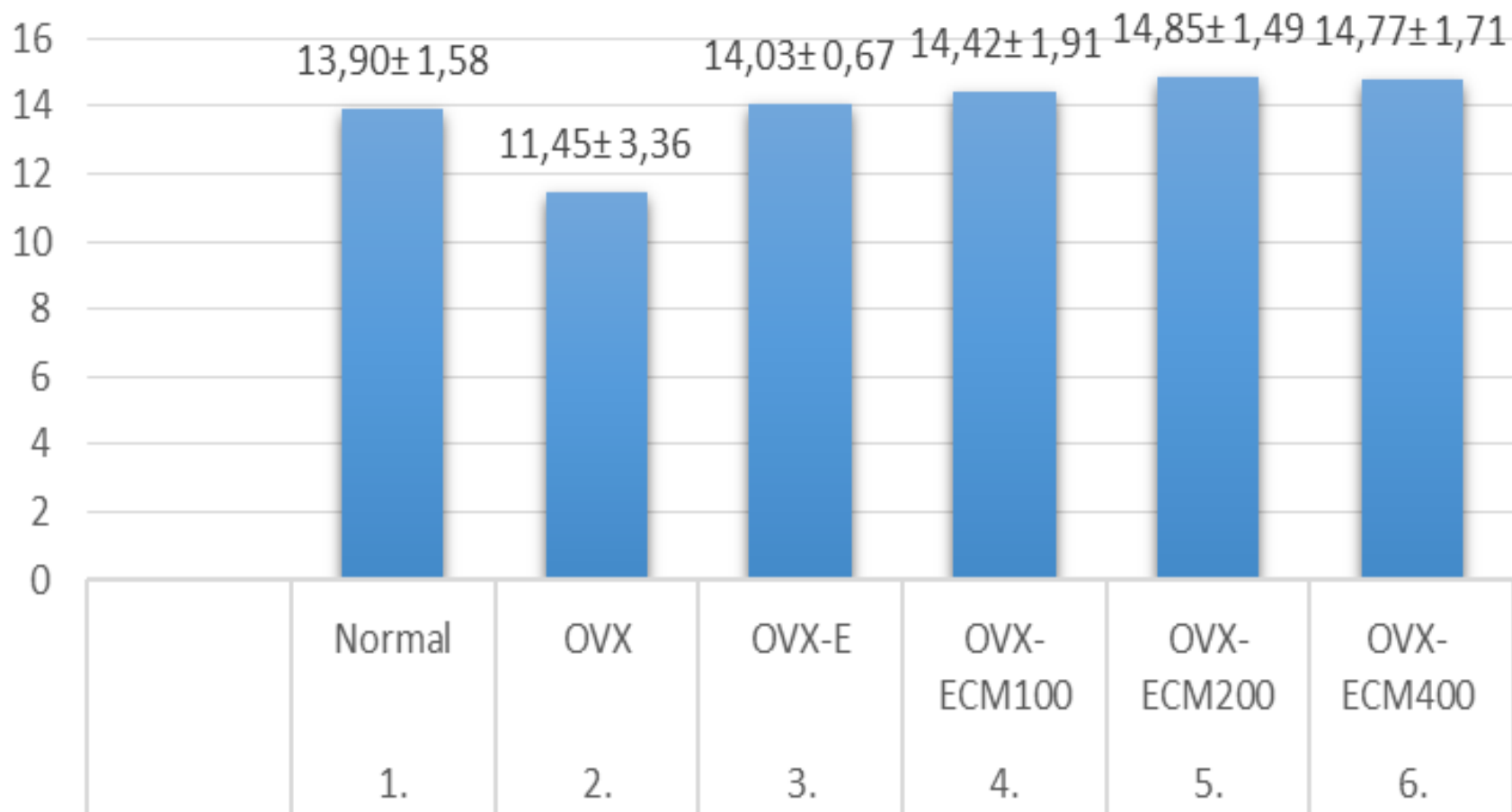
Diameter of lumen's glands (mean \pm SEM)



Number of endometrial glands (mean \pm SEM)

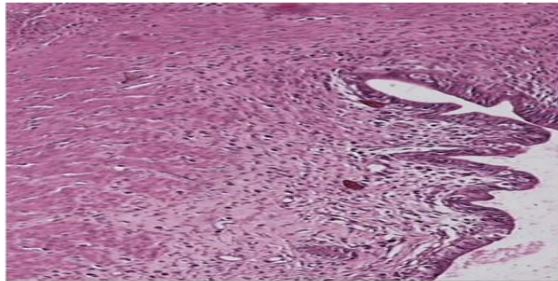


Epithelial height of endometrial glands (mean \pm SEM)

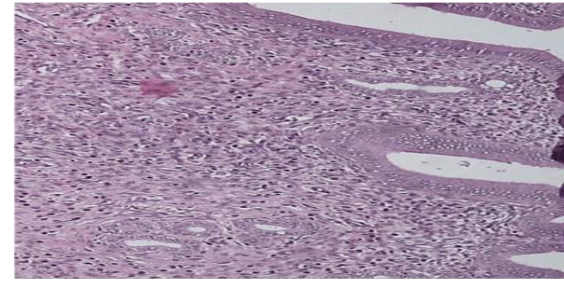


The morphology of endometrial glands among the groups.

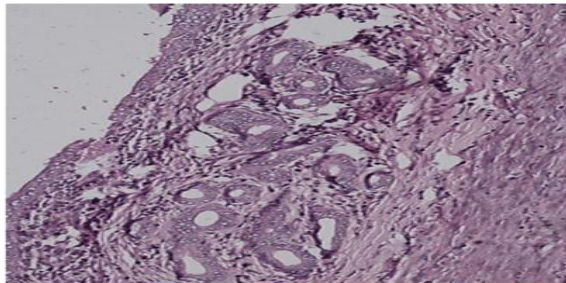
OVX



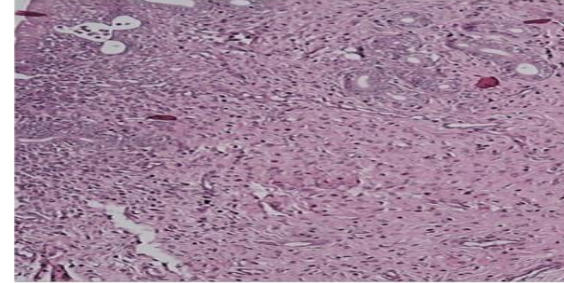
Normal



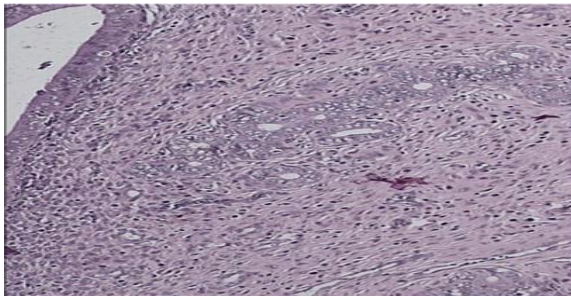
OVX-E



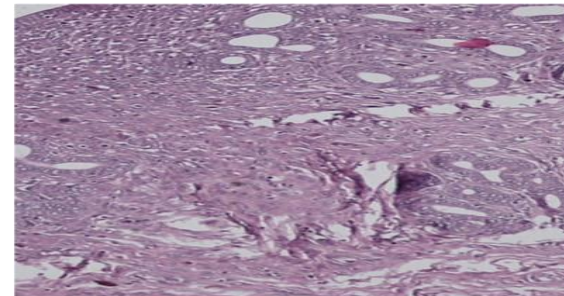
OVX-ECM 100



OVX-ECM 200



OVX-ECM 400



Discussion

- Extract of *C. moschata* significantly increases the number of glands and the diameter of the lumen of endometrial glands, whereas the epithelium thickness of the endometrial glands shows no significant increase.
- *C. moschata* seeds contain secoisolariciresinol, which belongs to the compound of lignans (Sicilia et al., 2003), and phenolic glycosides that are included in isoflavones (Lie et al., 2009). Lignans and isoflavones are primary classes of a phytoestrogen agent (Cornwell et al., 2004).

- The increasing number of endometrial glands is supposedly due to the proliferation and differentiation of endometrial glands
- Gland development occurs because of estrogen going to cause proliferation, morphogenesis, and differentiation.

Conclusion

- *C. moschata* seed extract treatment registered orally significantly increases the number of the endometrial glands and diameter of the lumen of endometrial glands, but this treatment still provides no evidence of thickening the endometrial glandular epithelium in ovariectomized rats.

An aerial photograph of a university campus. The central focus is a large, multi-story building with a complex, star-shaped or geometric design. The building has a mix of white and brown facades and is surrounded by lush green trees and landscaped grounds. In the foreground, there are several green fields, possibly sports fields or lawns. The background shows a residential area with houses and a road, and further back, rolling green hills under a clear sky. A large green rectangular box is overlaid on the center of the image, containing the text "Thank you very much Arigatou gozaimasu" in red, bold, sans-serif font.

**Thank you very much
Arigatou gozaimasu**