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## Effects of raw *Chelidonium majus* extracts on different strains of microorganisms

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**Abstract:** *Chelidonium majus* is a plant that grows mainly in Europe and Asia. It has small yellow leaves and flowers, which are often used for therapeutic purposes. Alcoholic extracts of *Chelidonium majus* have an antimicrobial effect, but there is little research in the scientific literature on the antimicrobial effect of aqueous extracts of this plant. In this research, the effect of crude aqueous extracts of *Chelidonium majus* was investigated on different strains of *Escherichia coli*, *Staphylococcus aureus*, *Enterobacter cloacae* and *Candida albicans* microorganisms. *Chelidonium majus* was collected in different seasons (spring, summer, autumn, winter) from the city of Timisoara, Romania. Different volumes of extracts were diluted with microorganism-specific media. Strain cultures containing different volumes of extracts were incubated for 20 hours under shaking and optical density was measured at the beginning of incubation and after 20 hours.

### Introduction

*Chelidonium majus* has been known since ancient times for its beneficial properties. Among the key alkaloids present in *Chelidonium majus* are chelidone, berberine, coptisine, sanguinarine and chelerythrine, found in different portions of the plant. This plant exhibits multiple biological actions such as antiviral, antitumor, antibacterial, antifungal and anti-inflammatory effects. Over the centuries, the yellow-orange latex of the plant has been used in traditional treatments to combat warts and symptoms associated with human papillomavirus (HPV) infections.



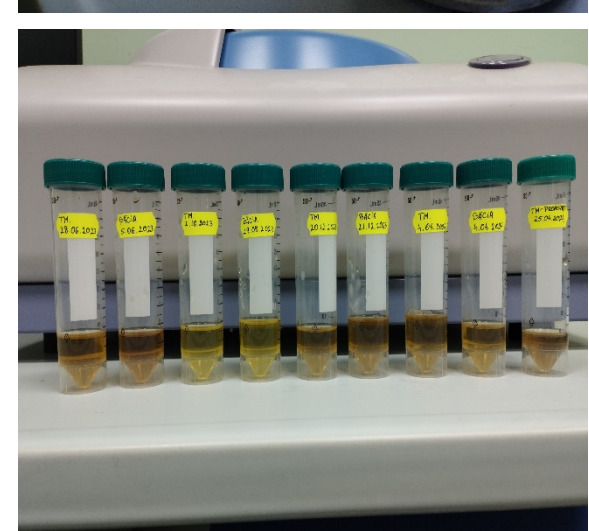
FIG.1 *Chelidonium majus*

### Material and method



Preparation of aqueous extracts of *Chelidonium majus*

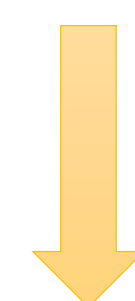
Aqueous extracts were made by mixing 50 g of plant tissue with 50 mL of distilled water for 5 minutes.



Centrifugation at 6000 rpm for 15 min of extract of *Chelidonium majus* and sterilization



Addition of pre-culture of bacterial strains (*Escherichia coli*, *Staphylococcus aureus*, *Enterobacter cloacae*) and yeast strain (*Candida albicans*) over the extract of *Chelidonium majus*



Incubation of microtiter plates

### Results and discussions

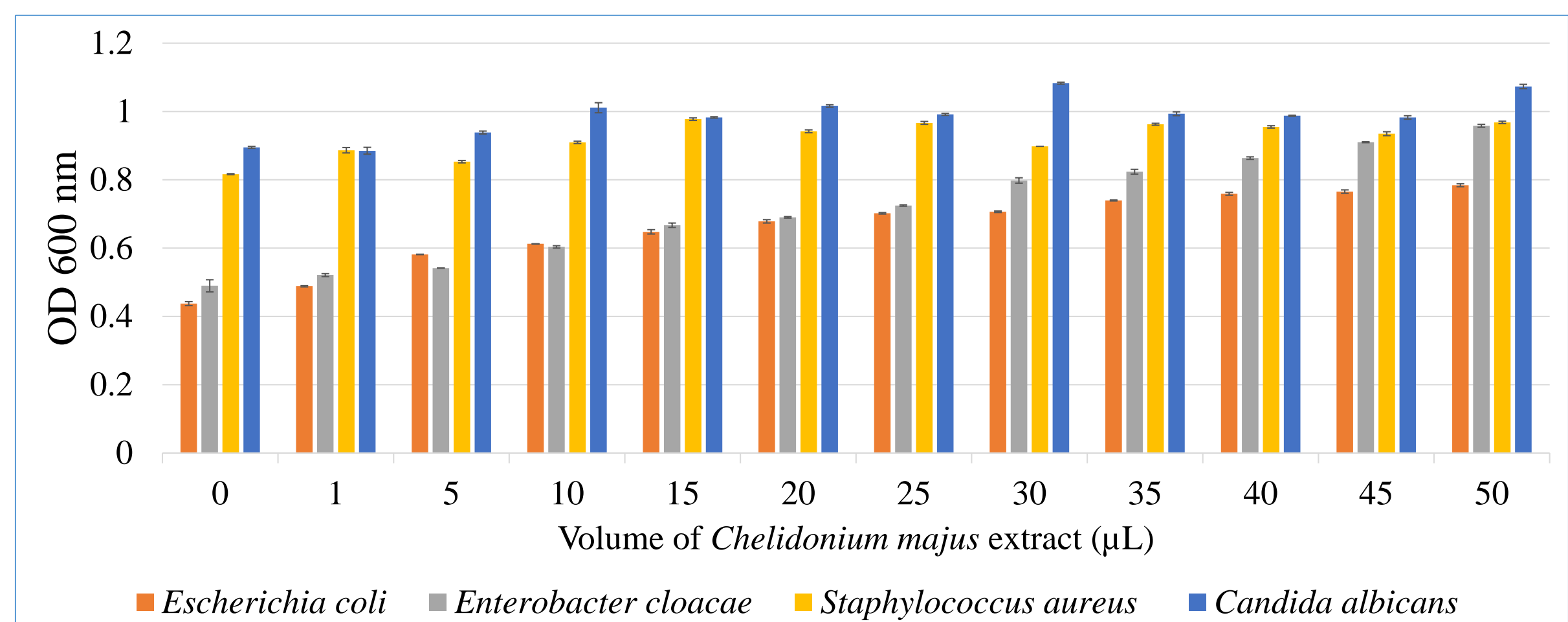


FIG.2 Effect of aqueous extract of *Chelidonium majus* (sampled on 28.06.2023) on different strains of microorganisms

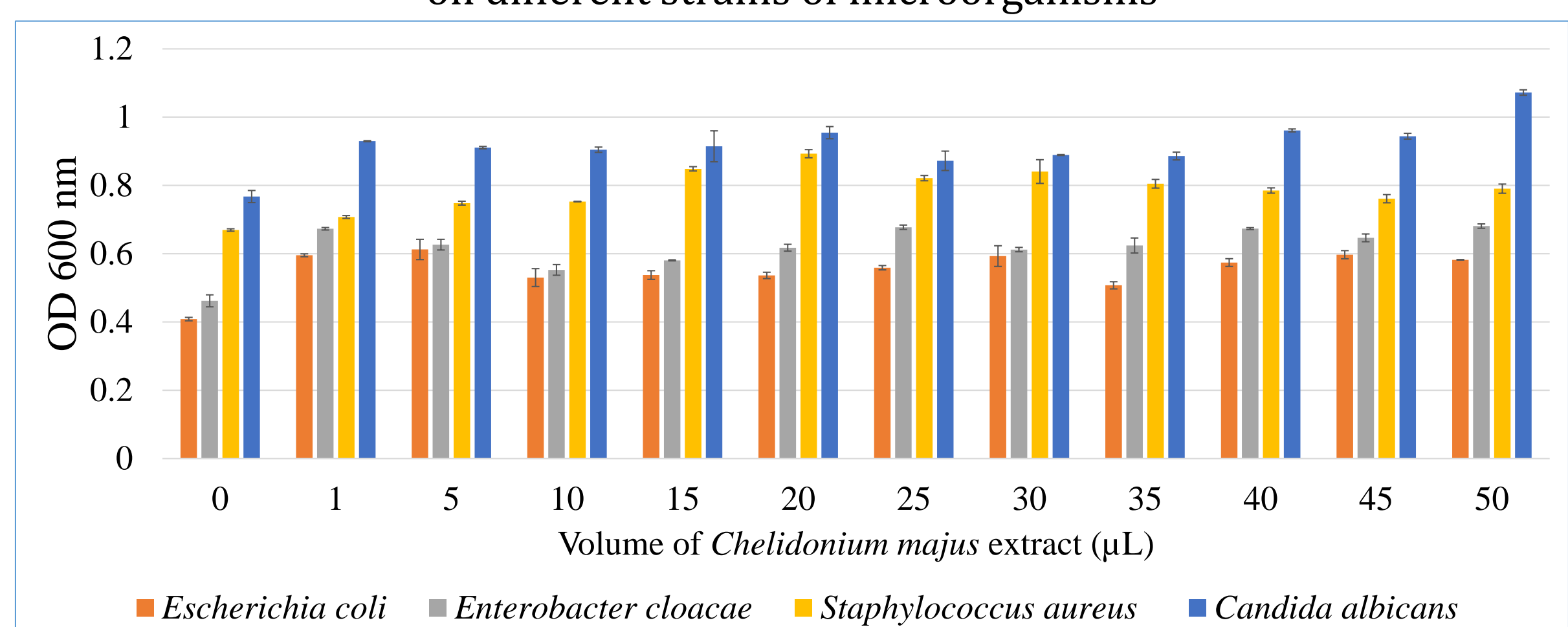


FIG.3 Effect of aqueous extract of *Chelidonium majus* (sampled on 02.10.2023) on different strains of microorganisms

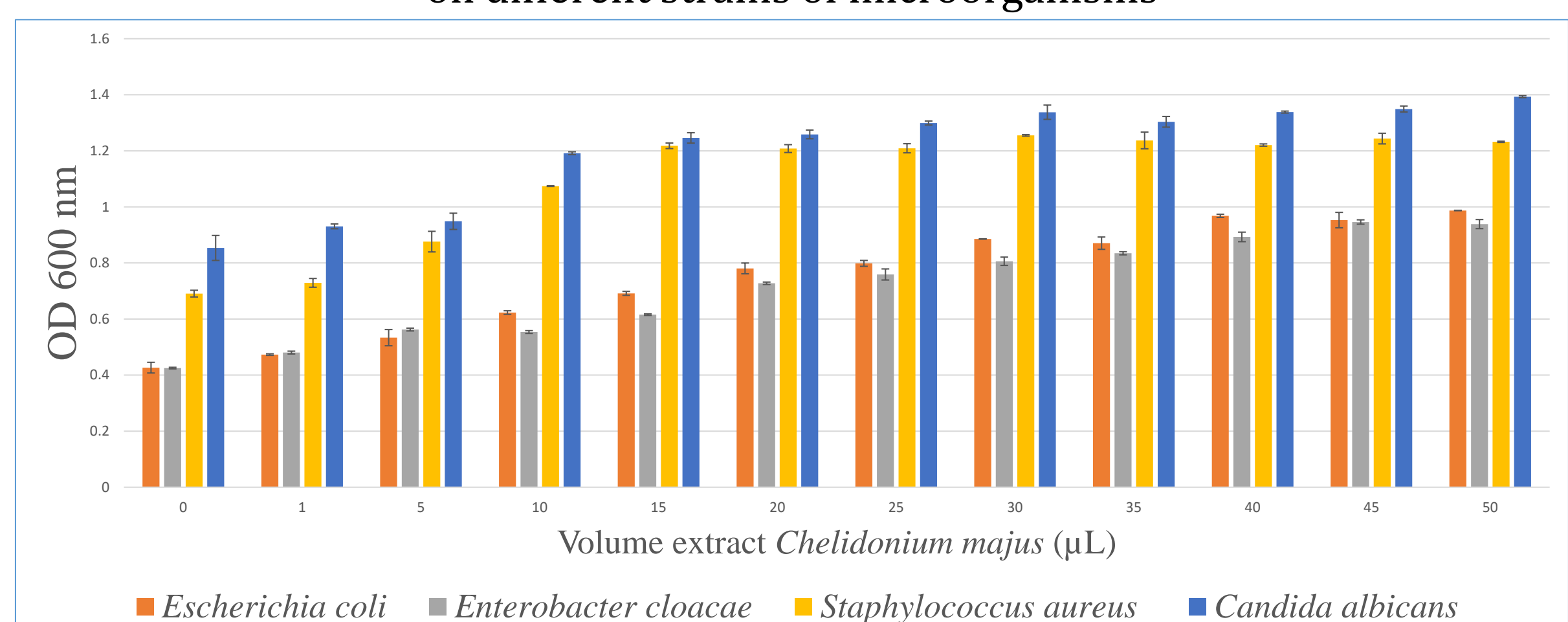


FIG.4 Effect of aqueous extract of *Chelidonium majus* (sampled on 20.12.2023) on different strains of microorganisms

### Conclusions:

The results showed that as the concentration of extracts in the culture media increased, the microorganisms grew much better. Therefore, aqueous extracts of *Chelidonium majus* have a beneficial effect on the growth of the strains taken in the study, contrary to the effect of alcoholic extracts discussed in other scientific studies.

**References:** Maji A.K, Banerji P. *Chelidonium majus* L. (greater celandine) - a review on its phytochemical and therapeutic perspectives. International Journal of Herbal Medicine 2015; 3 (1): 10-27  
Musidlak O, Warowicka A, Broniarczyk J, Adamczyk D, Goździcka-Józefiak A, Nawrot R. The Activity of *Chelidonium majus* L. Latex and Its Components on HPV Reveal Insights into the Antiviral Molecular Mechanism. International Journal of Molecular Sciences. 2022;23(16):9241. doi: 10.3390/ijms23169241.

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