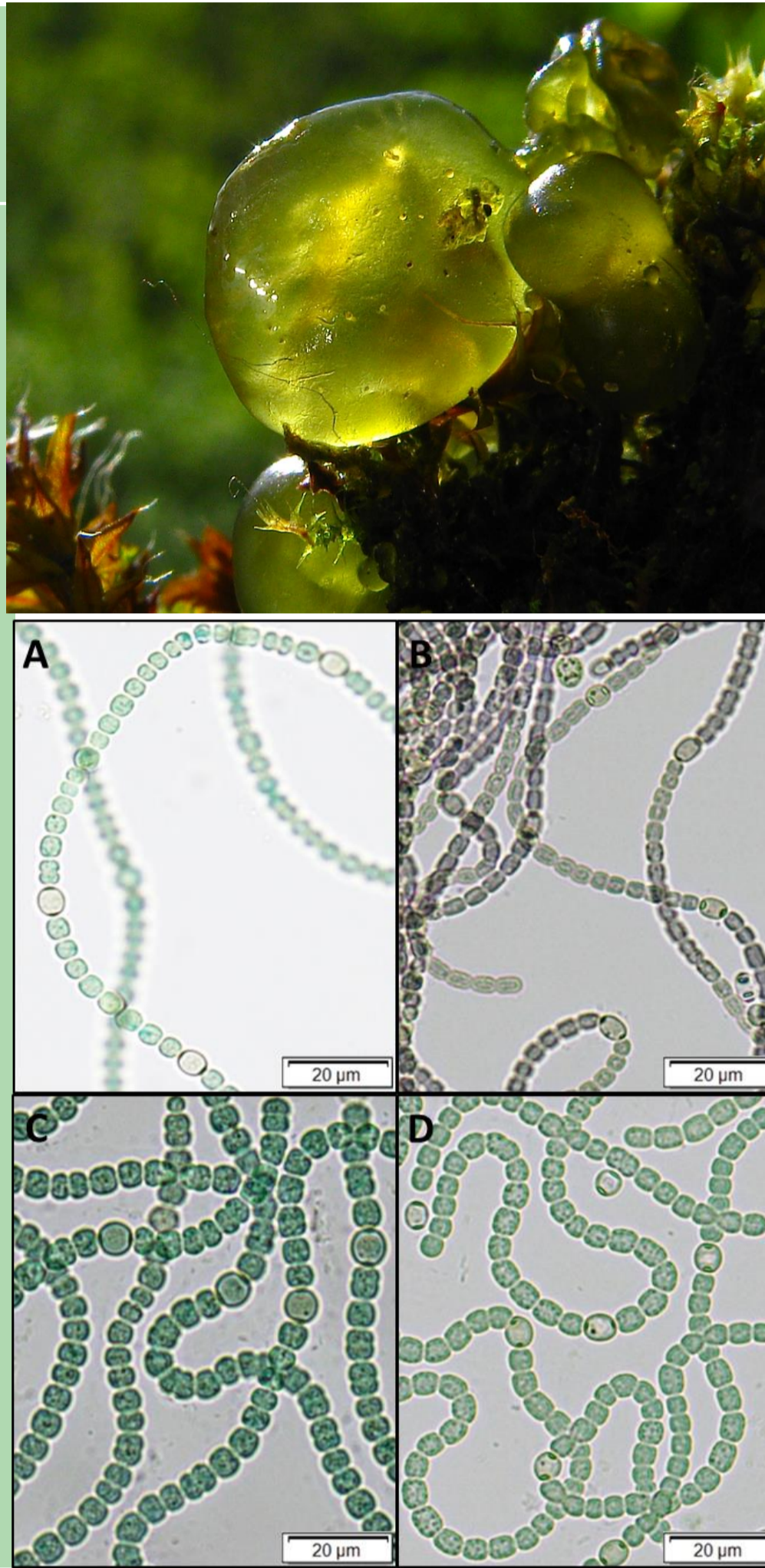


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## 1. Introduction

Cyanobacteria (blue-green algae) are ancient microorganisms found worldwide. Cyanobacteria may be able to produce secondary metabolites of different structures and effects. *Nostoc* species belong to the group of heterocystic filamentous cyanobacteria. *Nostoc* species have long been known to produce metabolites with a wide variety of biological effects. One group of biotechnological and therapeutic significance is the group of metabolites with antimicrobial effects, especially those with antibacterial effects.



## 2. Research aims

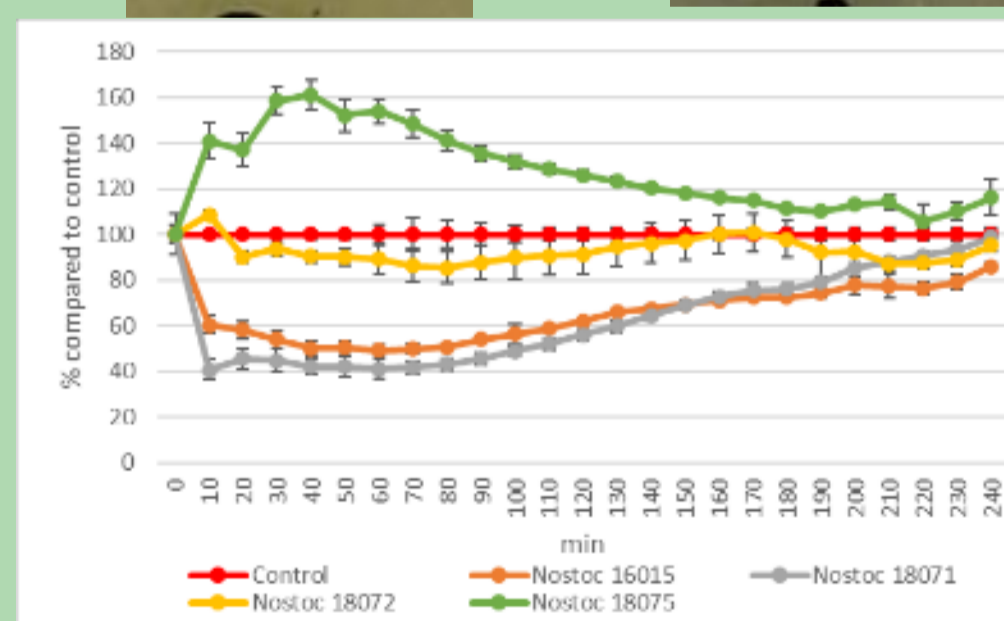
During our work, the antibacterial effect of *Nostoc* isolates was investigated on *Escherichia coli* (*E. coli*) cultures. Our aim was to find cyanobacterial strains with antibacterial effects and to increase the number of new antibiotics in the future.



## 3. Results and discussion

During the disc tests, we assumed that we would see nice characteristic zones of inhibition, and in a few cases, we experienced such an effect, but relatively small. We found the results interesting, especially after re-examining the petri dishes after 48 and 72 hours. In the case of many extracts, we found that the cells grew back in the inhibition zones.

Therefore, we also conducted a microplate experiment where we found that some extracts inhibited *E. coli* growth, some stimulated culture growth and some had no effect on *E. coli*. Analysing the growth data, it seemed as if these effects were often intermittent: the differences we observed at the beginning of the experiment would sooner or later disappear and the growth curves would adjust to the level of control. This study would further help the development of natural medicines and would later contribute to the development of new antibiotics.



## 4. Conclusion

Based on literature sources, we assumed that these isolates might have antibacterial properties, so we selected a basic test. The extent of the effects was difficult to see on the disc tests. Therefore, we switched to another, more modern and easily quantifiable test system, which showed the transient antimicrobial effect in several selected isolates.

## 5. References

Milán Riba (2020): [Peptide pattern analysis of cyanobacteria](#), PhD thesis (in Hungarian)  
<https://en.wikipedia.org/wiki/Nostoc>