



# Natural biostimulators for plants growing and development.

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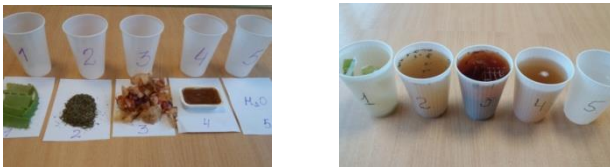
## 1. Introduction

Having studied scientific data on the influence of external and internal factors on the growth and development of plants, it was found that plant growth regulators are physiologically active compounds of synthetic or natural origin capable of causing small changes in the growth and development of plants in small quantities.

As we know that chemical biostimulators are expensive and also not good for plants. So we decided to make them in natural way, to not harm the nature.

## 2. Experimental setup

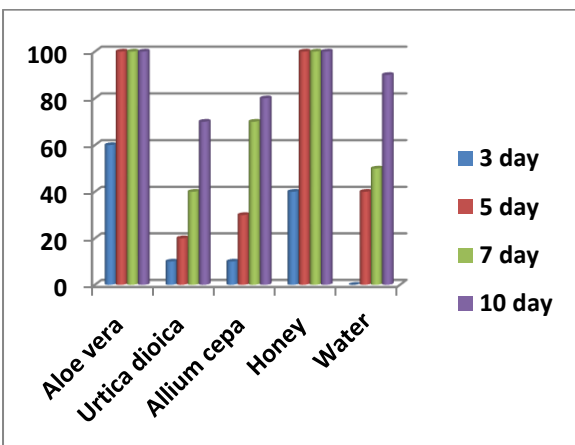
So we decided to pick natural products to make biostimulators. For first we pick: *Aloe vera*, *Urtica dioica*, *Allium cepa*, Honey, Water.



After we boiled everything with water and every week we had to spill drops of biostimulators on cucumber seeds.

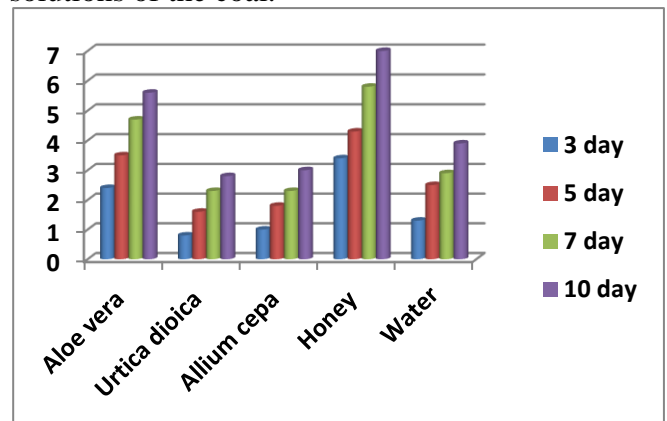
## 3. Result

After 10 days of experiment we noticed that some of the cucumber seedlings has growth up. Here is results of our experiment:



Investigated solutions of coals influence the germination of seeds. In samples № 1 (*Aloe vera*) and № 4 (Honey), all the seeds were raised on day 5, and in the samples № 2 (*Urtica dioica*) 7 seeds emerged, and in № 3 (*Allium cepa*) 8 seeds on the tenth day. The greatest stimulating effect on germination of seeds was rendered by a solution of *Aloe vera* and a solution of honey.

Determination of the development of shoots of cucumbers under the influence of the studied solutions of the coal.



As a result of the experiment it was revealed that the solutions of the coals influence the growth and development of shoots unequally. In comparison with water (control), the honey seed (3,4 cm) and *Aloe vera* (2,4cm) influence the most influence on the seed germination rate, and honey solution (7cm) had an effect on the growth of cucumber shoots. However, shoots in solution of onion *Allium cepa* (3cm) and *Urtica dioica* (2,8cm) developed worst of all, and later died.

## 4. Conclusion

Not all natural substances have the same effect on the growth of different parts of plants. According to the results of experiments, the honey solution and aloe juice solution have the highest efficiency, since they stimulate the germination and growth of shoots and plant roots. Honey exhibits antimicrobial, antiseptic and immunomodulating properties, which is very important for rooting.