CHANGES IN SEED PROTECTION POTENCY AS A RESULT OF DYNAMIC INTERACTIONS BETWEEN SESQUITERPENE COMPONENTS OF CARROT SEEDS AND PATHOGENIC FUNGI

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Higher plants cannot change their locations, but they could adapt to a given environment. These organisms are well equipped with defensive and offensive mechanisms either to protect themselves or to promote the proliferation of their species. Such defence mechanisms were acquired upon long process of evolution basing on their chemical interactions with other elements of environment. Most probably, this is the reason for plants to release different chemical substances (allelochemicals), in sufficient quantities to affect their natural competitor.

We have been interested in sesquiterpenic allelochemicals of carrot seeds (*Daucus carota* L.) in the context of the low sensitivity of the seeds to fungal infections. It is generally known that application of pesticides in carrot crops is limited, and the plants are noticeably free from microbial attack. These observations are especially important because of fundamental role of fungal infections, which might be considered as the main factor influencing the health of plants at their early stage of the growth and development.

The results of our experiments indicated that the most widespread fungi infesting the surface of chemically unprotected stored carrot seeds are those belonging to families of *Alternaria, Penicillium* and *Fusarium*. Despite the presence of phytopathogenic *Alternaria alternata* and *Fusarium oxysporum* on the surface of carrot seeds the germination potency of the seeds was estimated as above 80% what means that it is not affected by the fungi. The obtained results confirmed that the main reason of this phenomenon was the due the action of carotol, the main constituent of carrot seed oil. This sesquiterpenic compound showed the fungistatic activity against mentioned phytopathogenes even at a concentration 150 mg/l, what is about 200 times lower than its level in carrot seeds.

Unfortunately the effect of this protection has tended to decrease versus time of the contact between fungi and carotol. This process was the result of biotransformation of the carotol into its oxygenated derivative – daucol, which did not effect the development of the tested fungi at all. It is worth to note that the ability to transform carotol into daucol was exhibited by all other fungal strains, which were isolated from the surface of carrot seeds. These results seemed to confirm the existence of the dynamic, allelopathic interactions between fungi and plants.