

## ABSTRACT

Blotter and deep-freezing methods recommended by (ISTA) were selected for detecting seed-borne fungi in caraway and cumin seeds. The detected fungi on caraway seeds were 26 in blotter and 22 species in deep freezing one. However, on cumin seed, were 25 species in blotter and 22 species in deep freezing one. Seeds treated with 1% sodium hypochlorite significantly reduced the percentage of detected fungi. In seed parts, pericarp and mericarp contained most of fungi, while embryo contained lower numbers of seed-borne fungi. In pathogenicity test *Fusarium oxysporum* and *Alternaria* sp. were most virulent pathogenic fungi with caraway and cumin seeds. Also, percentage of survival seedlings was higher in case of soil infestation compared with seed inoculation. Celery was generally the most susceptible host for infection while, khillah was the least susceptible one that infected with the fungi tested in the host range experiment. There was relationship between the percentage of naturally infected seeds and disease development in seedlings and mature plants.

In storage experiment ; seeds were stored in polyethylene bags and jute sacks up to one year under lab. conditions ;seed borne fungi, moisture content, germinability of the stored seeds and aflatoxins production were determined monthly through time of storage. Total amount of B1, B2, G1 and G2 aflatoxins during storage periods were less than 2 µg/kg seed. Only 7 out of 55 *Aspergillus flavus* isolates that were obtained from stored caraway seeds (12.7%) produced aflatoxins in synthetic medium, while 3 isolates (10.7%) among 28 isolates from stored cumin seeds produced aflatoxin in synthetic medium. In all tested fungi thyme and clove oils had strong inhibition activity followed by peppermint and camphor against pathogenic fungi. The most effective essential oils that increased the percentage of survival plants were peppermint (86%), in caraway and

thyme (65%) in cumin but the least effective oil was camphor for both of caraway and cumin. Seed dressing by seed gaurd and *Trichoderma harzianum* significantly decreased the percentages of pre and post emergence damping off in comparison with the control. In field trials, all treatments includes bioagents and fungicides, reduced *Alternaria* blight intensity and increased grain yield compared with the control treatment. The maximum inhibition of seed-borne fungi was calculated from seeds treated with Topsin M-70. Seed treatment with Bavistin before cultivation in greenhouse significantly decreased the percentages of pre and post emergence damping-off followed by Topsin M.70.

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