GAMMA RAYS INDUCED CYTOMICTIC VARIATIONS IN POLLEN MOTHER CELLS OF CUMIN (*CUMINUM CYMINUM*) L.

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Cytomixis is an enigmatic cytological phenomenon found between proximately situated PMCs reported in Cuminum cyminum L. The transmigration of chromatin material between two adjacent meiocytes was observed at various exposure rate of gamma radiation viz., 100, 125, 150 and 175Gy in GC-4 variety of cumin. The microsporogenesis study of gamma treated sets reveals intercellular migration through various channels or direct fusion. In the present study, the cytomixis was more frequently noticed at meiosis I as compared to later stage i.e., meiosis II. The rate of recurrence of cytomixis shows gradual increment along with the increasing dose rate of gamma rays. As consequences of cytomixis various aberrant post meiotic products were recorded at later phase of cell cycle. . Moreover, in addition to cytomixis other chromosomal abnormalities were also recorded which leads to reduction in pollen fertility. Syncytes were observed at low frequency but have high evolutionary significance as they produce gametes with higher ploidy level. The production of gametes with unbalanced chromosomes can be further exploited in breeding techniques as they are potent variation inducer.

***Key words**: Cytomixis, cytoplasmic connection, Cuminum cyminum, Gamma rays, Hyperploid, Hypoploid, Syncytes.*

ГАММА-ПРОМЕНІ ІНДУКУЮТЬ ЗМІНИ ЦИТОМІКСИСУ В МАТЕРИНСЬКИХ КЛІТИНАХ ПИЛКУ ЗІРИ (*CUMINUM CYMINUM*) L.

Цитоміксис – це загадкове цитологічне явище, яке спостерігається між близько розташованими материнськими клітинами пилку (МКП) *Cuminum cyminum* L. Взаємне переміщення складу хроматину між двома прилеглими мейоцитами спостерігали при різних рівнях гамма-опромінення *viz.* 100, 125, 150 і 175 Гр у сорту зіри GC-4. Дослідження мікроспорогенезу наборів, опромінених гамма-променями, виявило міжклітинну міграцію різними каналами або безпосереднє злиття. У цій роботі цитоміксис набагато частіше спостерігали як мейоз I порівняно з пізнішим етапом, тобто мейозом II. Рівень повторюваності цитоміксису демонструє поступове зростання з одночасним збільшенням дози гамма-опромінення. Внаслідок цитоміксису було зафіксовано різні аномальні продукти постмейозу на пізнішій стадії клітинного циклу. Більше того, окрім цитоміксису, спостерігалися також інші хромосомні аномалії, які призвели до зниження родючості пилку. Синцитії спостерігали при низькій частоті, однак вони мали високу еволюційну значимість, оскільки вони виробляють гамети з високим рівнем плоїдності. Утворення гамет з незбалансованих хромосом можна використовувати надалі у технологіях селекції, оскільки вони є потужним індуктором змін.

Ключові слова: цитоміксис, поєднання цитоплазми, *Cuminum cyminum*, гамма-промені, гіперплоїдний, гіпоплоїдний, синцитій.

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Received October 13, 2020
Received March 02, 2021
Accepted May 18, 2022