

资源环境 生物药物 生物质转化

## 电子束辐照对金花葵花粉萌发率的影响

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### 摘要:

为研究电子束辐照对金花葵花粉萌发率的影响和对Cu<sup>2+</sup>注入的M1代的花花葵花粉萌发率的影响,通过300Gy、400Gy、500Gy、600Gy、800Gy和1 000Gy剂量的BF-5直线加速器对金花葵(*Abelmoschus manihot*)的离体花粉进行辐照处理。对处理花粉萌发培养研究表明,在电子束辐照实验剂量范围内,金花葵花粉的萌发率都受到抑制,但对经过Cu<sup>2+</sup>注入的M1代的花花葵花粉萌发率的影响则不同,其中较低剂量对4MeV 1×10<sup>11</sup> Cu<sup>2+</sup>/cm<sup>2</sup> M1代花粉萌发率影响不大;而对4MeV 1×10<sup>12</sup> Cu<sup>2+</sup>/cm<sup>2</sup> M1代花粉萌发率则有提高和促进作用,说明Cu<sup>2+</sup>注入提高了M1代花粉对电子束的抗性。这对金花葵优良品种选育具有积极意义。

**关键词:** 电子束;金花葵(*Abelmoschus manihot*);离子注入;花粉萌发率;生活力;花粉

## Effect of Electron Beam Irradiation on Germination Rate of *Abelmoschus manihot* s Pollen

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### Abstract:

In order to observe the effect of electron beam on germination rate of *Abelmoschus manihot* pollen and the effect of electron beam on germination rate of *Abelmoschus manihot* M1 pollens came from the seed infused by copper ion. Electron beam were irradiated into *Abelmoschus manihot* pollen in doses of 0 (i.e. control group) 300Gy, 400Gy, 500Gy, 600Gy, 800Gy and 1 000Gy with the BF-5 Linear accelerator. The pollen was cultured. The result showed that all electron beam irradiations in experimental dose range can inhibit the pollen germination. However, in the case when the pollen came from the seed infused by copper ion is the other way. The lower doses of electron beam had no significant effect on the M1 pollens from the seed implanted in dose of 1×10<sup>11</sup> Cu<sup>2+</sup>/cm<sup>2</sup> with the energy of 4MeV, but the germination rate of M1 pollens from the seed implanted were obviously increased in dose of 1×10<sup>12</sup> Cu<sup>2+</sup>/cm<sup>2</sup> with the energy of 4MeV. Comprehensive analysis of the above results showed that the pollen resistance of electron beam was increased by implanted Cu<sup>2+</sup>. It is of optimistic importance to select good varieties of *Abelmoschus manihot*.

**Keywords:** electron beam *Abelmoschus manihot* ion implantation pollen germination rate viability pollen

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