CONCLUSIONS

1) S'ha expressat el gen *mpi* (*Maize Proteinase Inhibitor*) en plantes d'arròs sota control d'un promotor constitutiu. L'expressió d'aquest gen, i acumulació de la proteïna MPI, es manté estable en generacions successives de línies transgèniques d'arròs.

2) L'expressió constitutiva del gen *mpi* en plantes d'arròs transgèniques confereix protecció front la infestació de larves del barrinador de l'arròs, *Chilo suppressalis*.

3) L'expressió del gen *mpi* en plantes d'arròs transgèniques provoca un efecte nociu en larves de *Chilo suppressalis*, alentint significativament el desenvolupament de les larves, i evitant, majoritàriament, l'assoliment d'estadi superiors a estadi larvari L4.

4) El promotor del gen *mpi* és funcional en arròs i confereix inductibilitat en resposta a ferida al gen informador *gus*. El fragment 2K (regió -1872 /+197) del promotor del gen *mpi* confereix una resposta més ràpida i una inducció per ferida més forta que el fragment C1 (regió –689/+197).

5) El fragment 2K del promotor del gen *mpi* no confereix expressió del gen informador *gus* en l'endosperm de la llavor d'arròs.

6) El gen *mpi* de blat de moro s'expressa correctament en plantes d'arròs sota control de les seves pròpies regions reguladores, promotor i terminador. Els nivells d'expressió que s'observen permeten obtenir efectes similars als observats amb les plantes que expressen aquest gen de manera constitutiva: reducció del pes de larves de *Chilo suppressalis* que s'hi alimenten, i interferència en el correcte desenvolupament larvari, frenant-lo en el llindar de l'estadi L4.

7) Els lepidòpters *Chilo suppressalis* i *Cacyreus marshalli* presenten en el seu sistema proteolític digestiu, un pH òptim alcalí (pH 10,5 i 10,0, respectivament) típic dels insectes d'aquest ordre. L'inhibidor MPI és capaç d'inhibir el 40% del total de les activitats proteolítiques digestives de *Chilo suppressalis* i el 30-40 % de les proteases digestives de *Cacyreus marshalli* (assaigs *in vitro*).

8) En el sistema digestiu de *Chilo suppressalis* hi participen serinaproteases del tipus tripsina i quimotripsina, essent les proteases del tipus elastasa menys importants quantitativament. Així mateix, també es troben activitats del tipus carboxipeptidasa i aspartilproteasa.

9) S'observa un efecte d'adaptació del sistema proteolític digestiu de les larves de *Chilo suppressalis* que han sigut alimentades en plantes transgèniques d'arròs, amb un augment de l'activitat proteolítica total del 40% respecte les larves control. Tanmateix, aquest augment no és efectiu per a contrarestar l'efecte inhibidor de l'MPI, ja que les larves veuen frentat el seu desenvolupament larvari i presenten una disminució significativa del seu pes.

10) La cecropina A inhibeix el creixement fúngic de *Fusarium moniliforme* i *Magnaporthe grisea in vitro,* presentant activitat antifúngica contra aquest dos fitopatògens a concentracions en el rang baix de μM. L'activitat antifúngica de la cecropina A front *Fusarium moniliforme* no es veu afectada per la presència de fluids intercel·lulars d'arròs.

11) El Trímer-Pep3, juxtaposició de monòmers del Pep3 separats per la seqüència espaiadora AGPA, constitueix un trímer funcional i amb activitat antifúngica.

12) Els pèptids sintètics derivats de la cecropina A, Pep3 i el Trímer-Pep3, conserven l'activitat antifúngica front *Fusarium moniliforme* en assaigs *in vitro,* també observada per la cecropina A. El pèptid Pep3, però no el trímer, presenta també activitat antifúngica front *Magnaporthe grisea*.

13) La proteïna AFP (*Antifungal Protein*) presenta una elevada activitat antifúngica front *Fusarium moniliforme* i *Magnaporthe grisea* a concentracions en el rang de nM, *in vitro*. Així mateix, presenta activitat antifúngica contra l'oomicet *Phytophthora infestans a* concentracions en el rang baix de μM. La presència de la proteïna AFP condueix a importants anomalies morfològiques dels fongs *Fusarium moniliforme* i *Magnaporthe grisea,* i de l'oomicet *Phytophthora infestans.*

14) No s'aprecien efectes tòxics de la proteïna AFP sobre protoplastes d'arròs per a concentracions d'AFP molt superiors als valors de concentració IC_{50} determinats pels diferents fongs fitopatògens assajats.

15) L'aplicació directe de proteïna AFP en plantes d'arròs confereix protecció front *Magnaporthe grisea*.

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ARRÒS A LA CASSOLA

Ingredient principal: *Oryza sativa* (varietat Sénia, Tebre, Bahia o Bomba)

Protocol:

- *Humitejar el fons de la cassola de fang, per fora, amb aigua. Posar la cassola al foc i afegir oli d'oliva.*
- *Sofregir ceba ben picada fins que es torni rossa.*
- *Afegir all trinxat.*
- *Afegir pebrot vermell i verd tallat a daus petits. Apujar el foc.*
- *Afegir tomàquet pelat i daus de sípia.*
- *Mentrestant, fregir en una paella a part, salsitxa, pollastre i/o costella de porc a trossos petits.*
- *Afegir la carn fregida a la cassola.*
- *Afegir els pèssols i les gambes (reservar els caps).*
- *Afegir una tassa de café per persona d'arròs.*
- *Remenar i afegir aigua o brou, que estigui ben calent, fins a cobrir l'arròs.*
- *Afegir musclos i petxines, que abans haurem bullit amb aigua i una fulla de llorer.*
- *Afegir el suc procedent de sofregir els caps de les gambes, amb una mica de brou.*
- *Anar remanant de tant en tant i afegir més brou si és necessari.*
- *Rectificar de sal, afegir pebre negre i vermell, i safrà.*
- *Coure fins que l'arròs estigui fet i apartar del foc.*
- *Deixar repossar 5 min, tapat amb un drap.*