

AZOLES Y HETEROCICLOS NITROGENADOS

ANALOGÍAS, GENERALIDADES, PROPIEDADES COMUNES Y NOCIONES DE REACTIVIDAD

CLAVES

SEA = SUSTITUCIÓN ELECTROFÍLICA AROMÁTICA.

SNA = SUSTITUCIÓN NUCLEOFÍLICA AROMÁTICA.

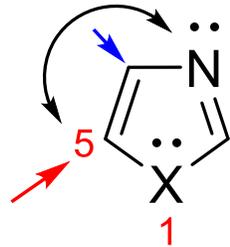
GS = GRUPO SUSTRADOR DE E-.

GD = GRUPO ELECTRODONADOR.

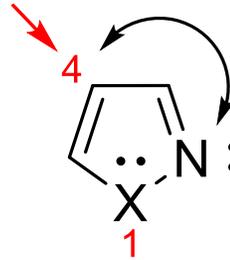
SEA en azoles 1,3 y azoles 1,2

*se da en la posición meta o 1,3
respecto al N*

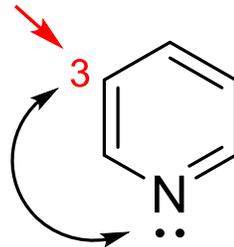
→ SEA menos
favorecida



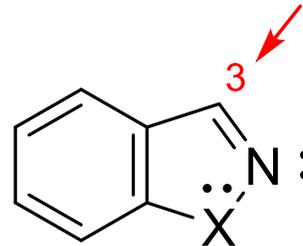
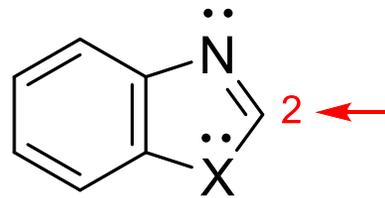
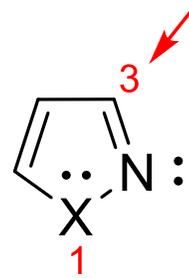
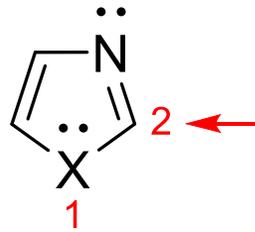
*se da en la posición meta o 1,3
respecto al N*



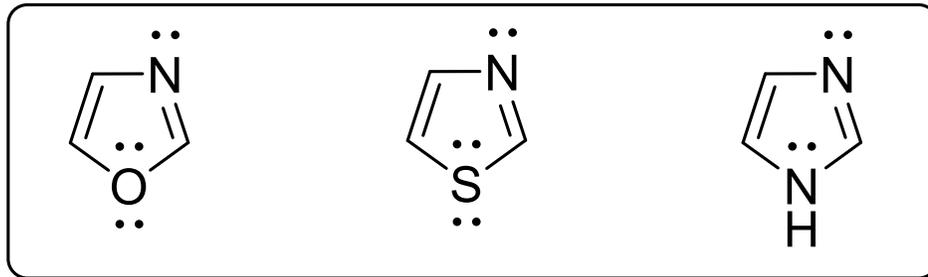
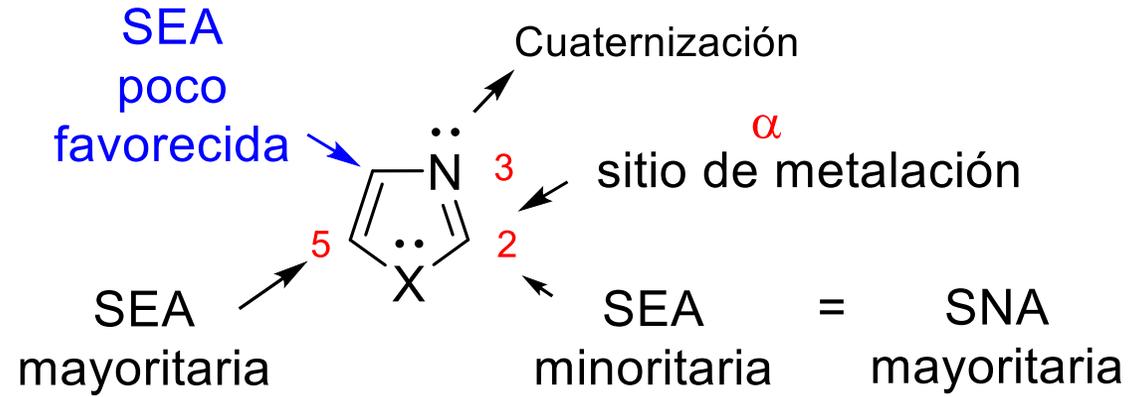
*se da en la posición meta o 1,3
respecto al N*



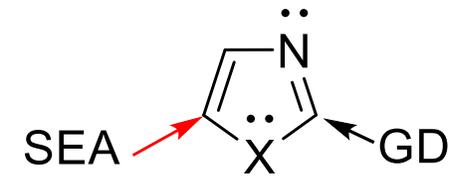
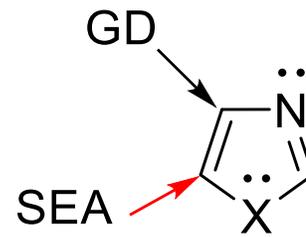
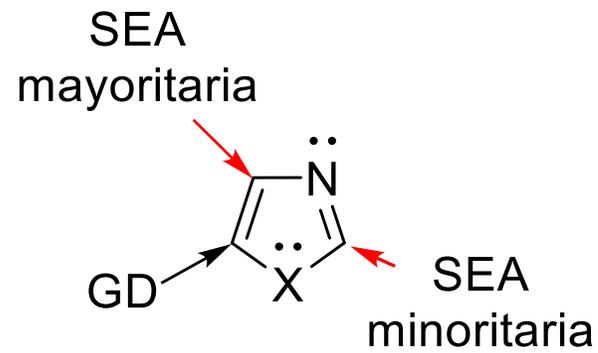
SNA en azoles 1,3 y azoles 1,2



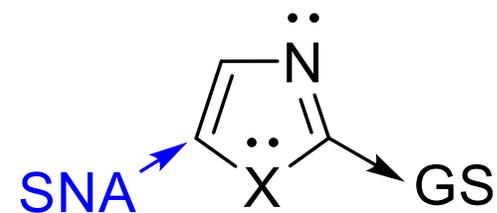
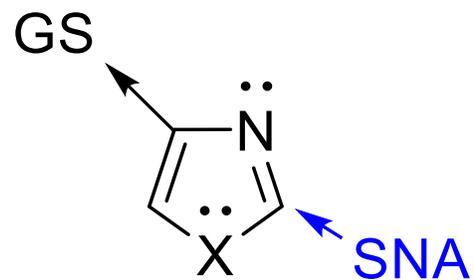
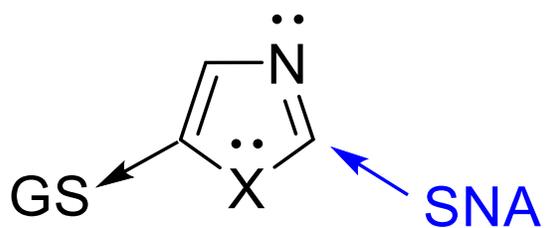
Azoles 1,3



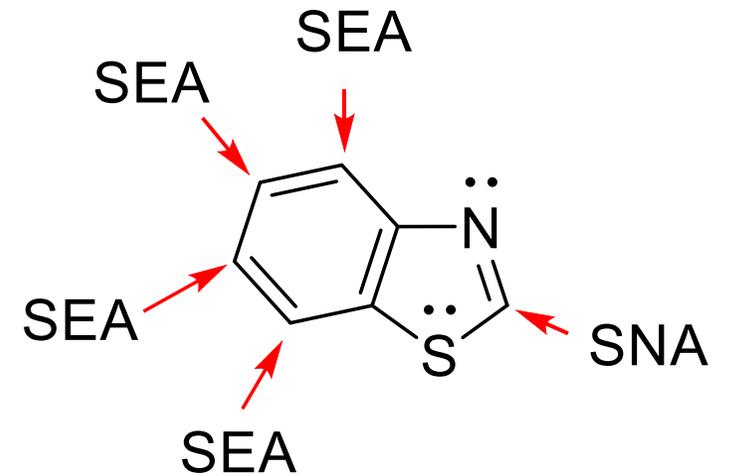
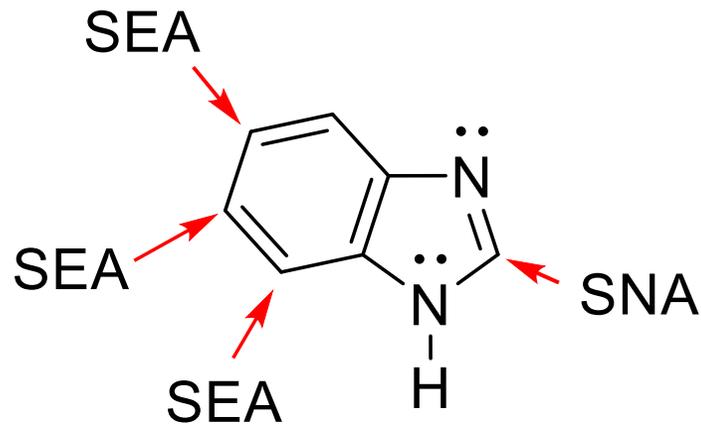
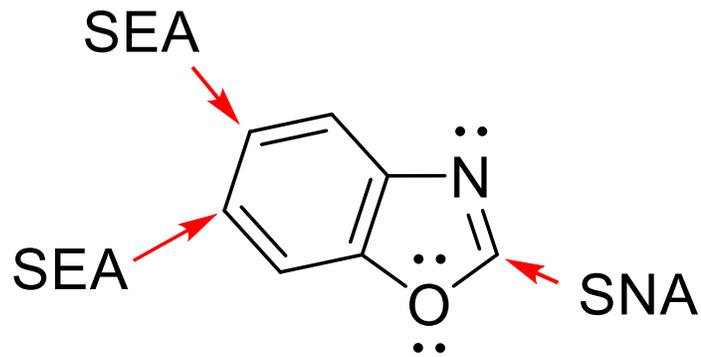
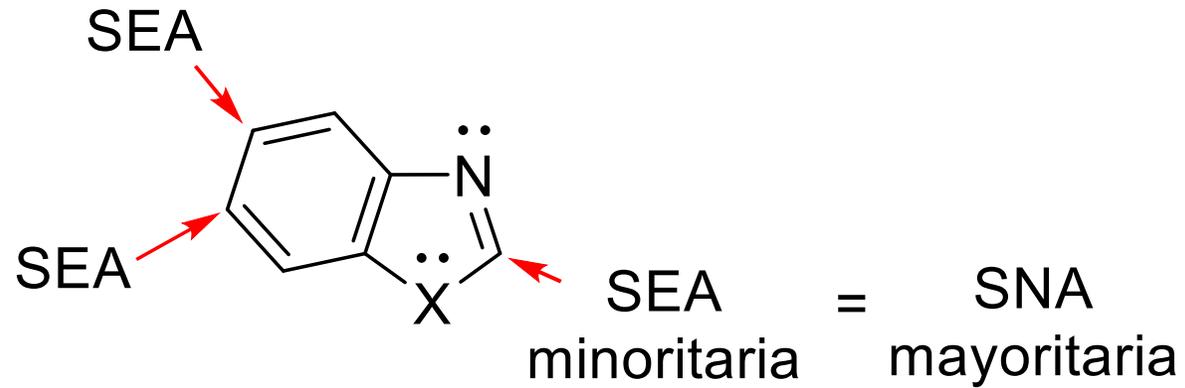
Azoles 1,3, SEA, GD



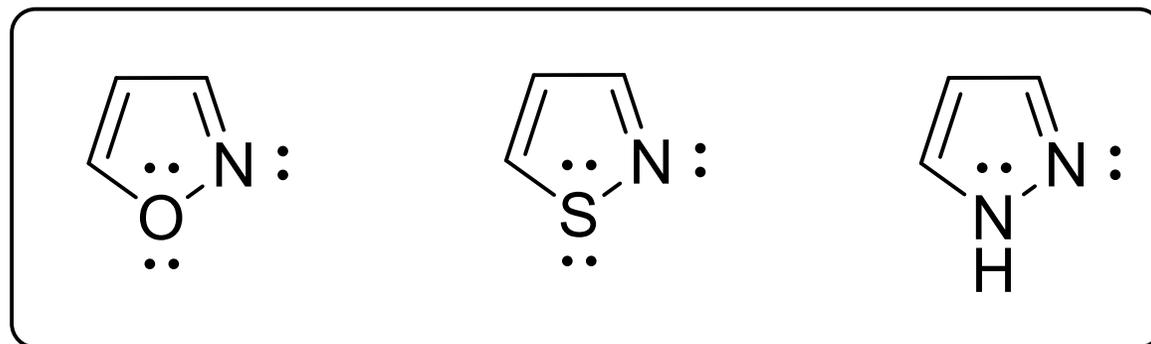
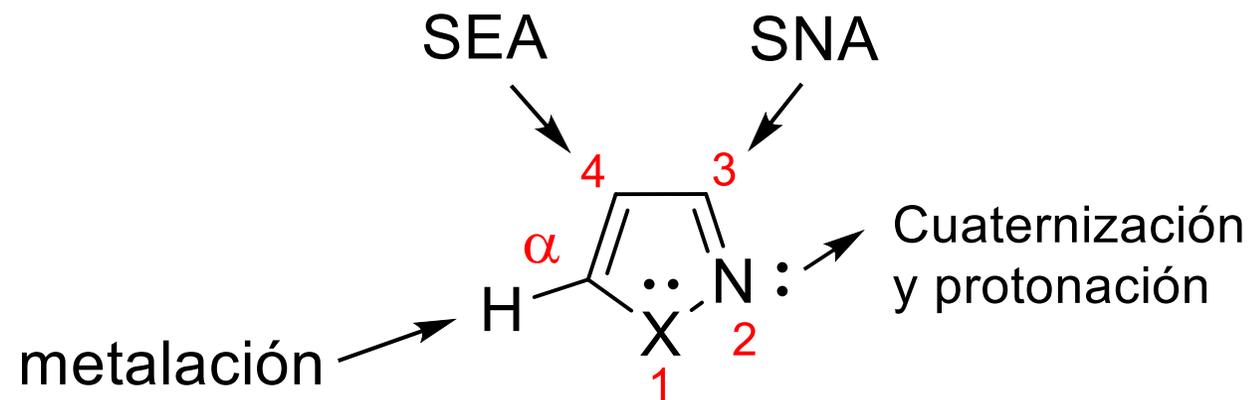
Azoles 1,3, GS



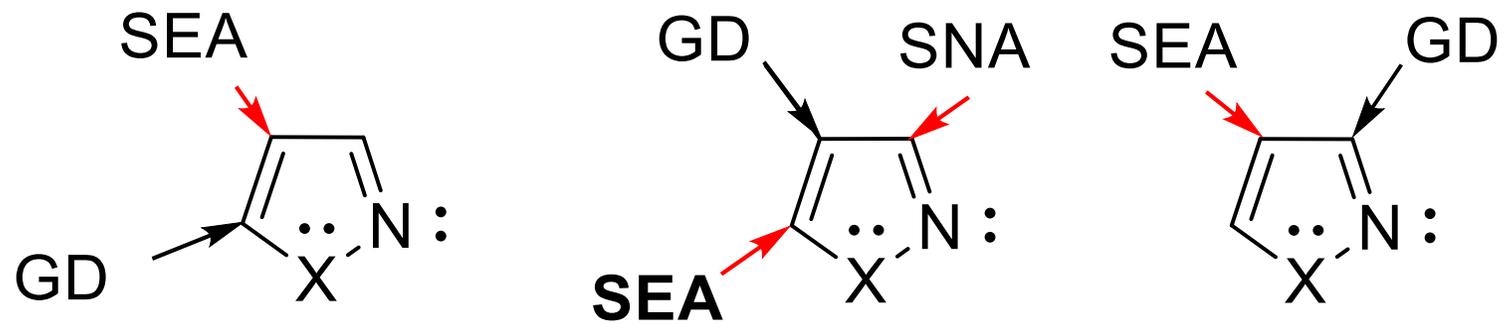
Benzo[d]azoles 1,3, SEA y SNA



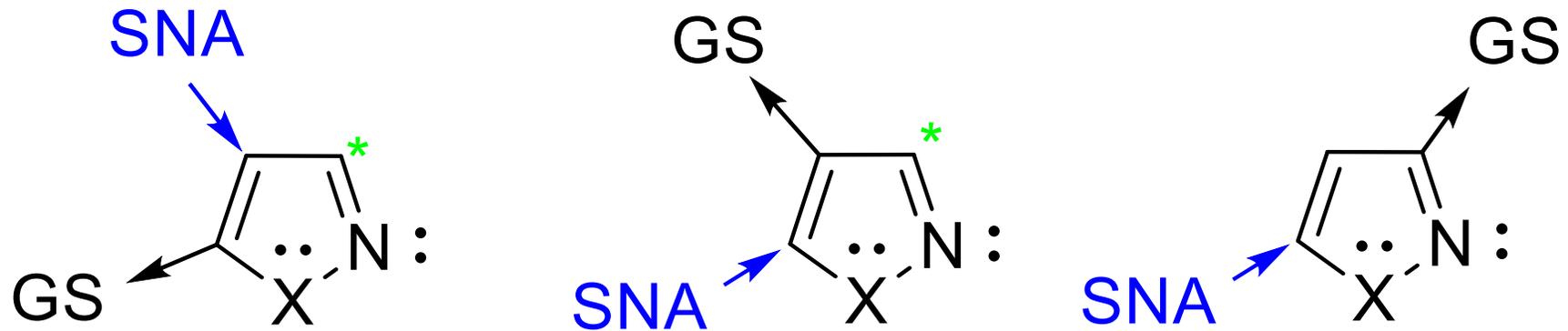
Azoles 1,2



Azoles 1,2, GD

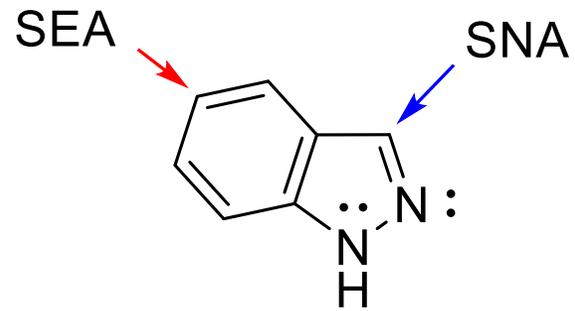
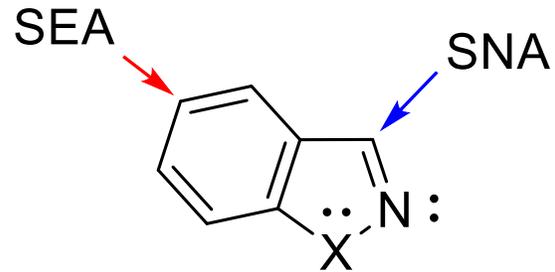


Azoles 1,2, GS



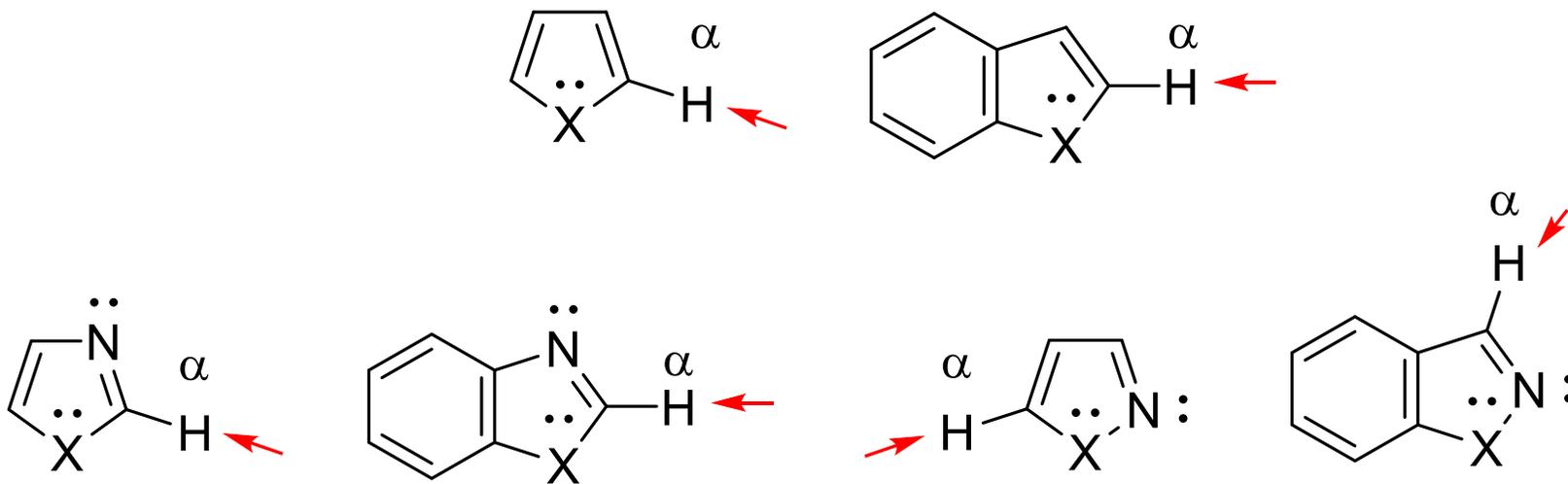
*SNA siempre favorecida

Benzo[d]azoles 1,2, SEA y SNA

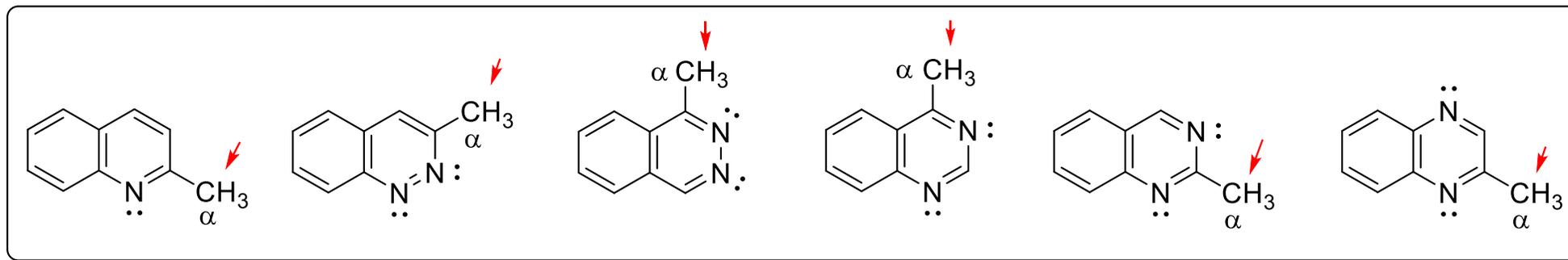
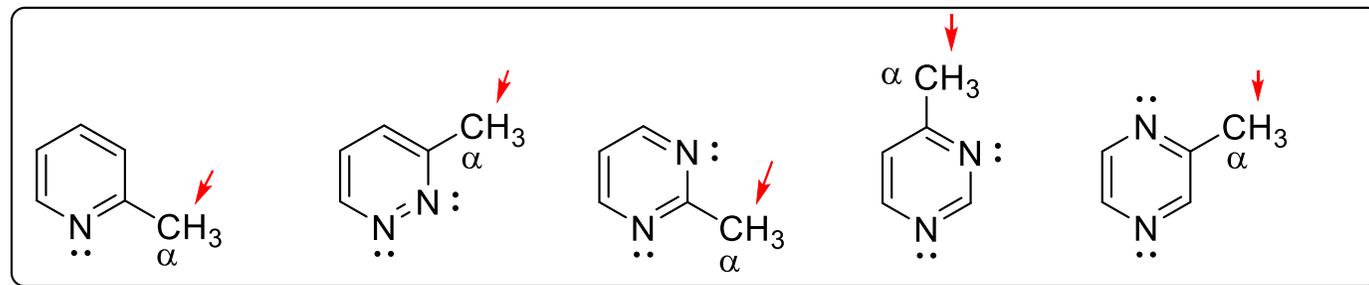
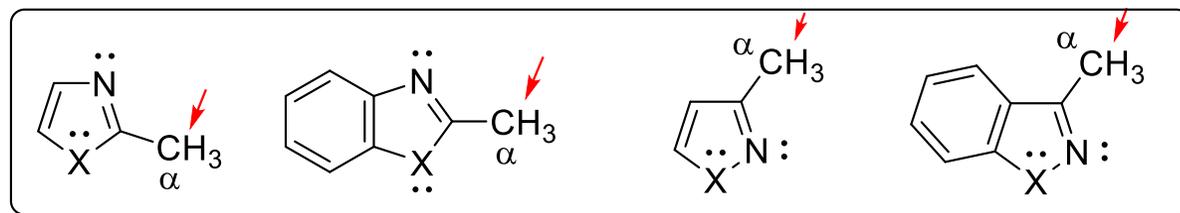
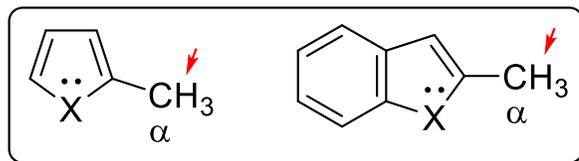


más estable

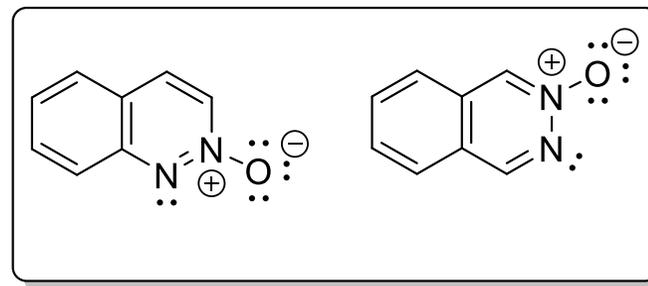
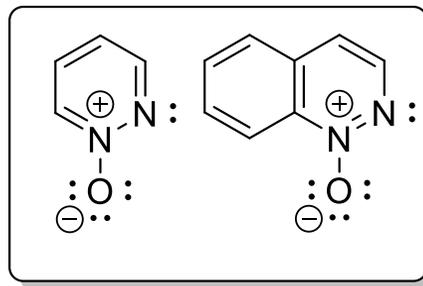
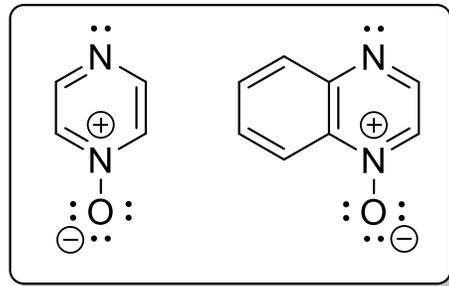
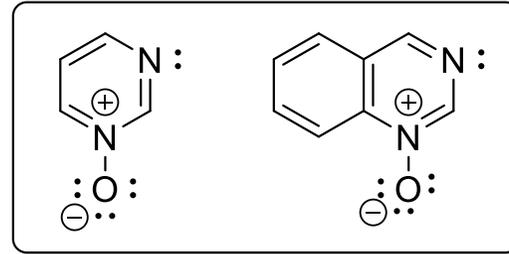
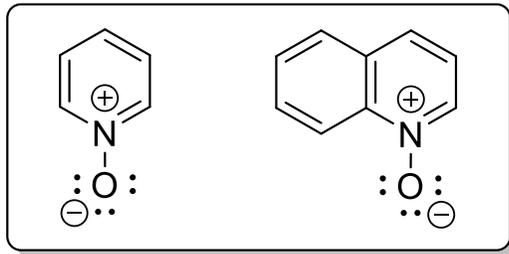
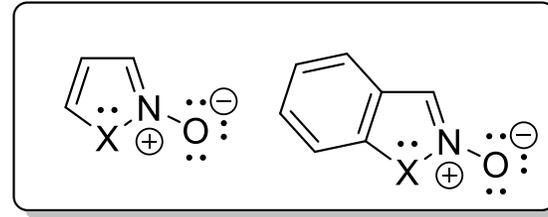
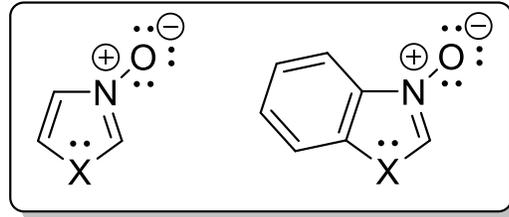
Metalación



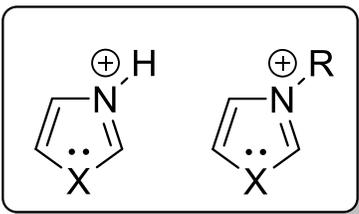
H ácidos en derivados metilados



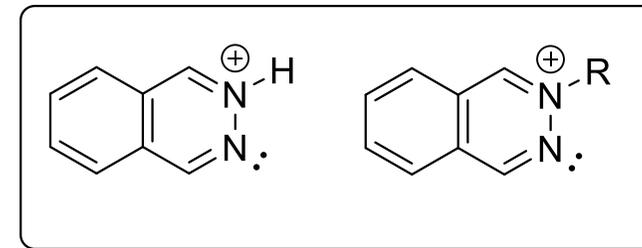
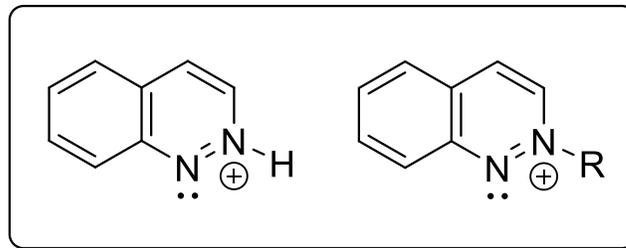
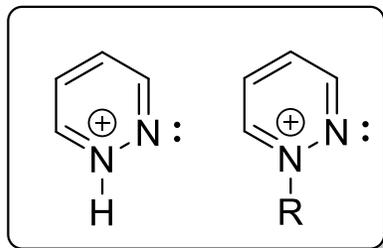
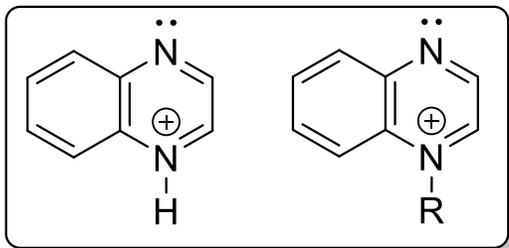
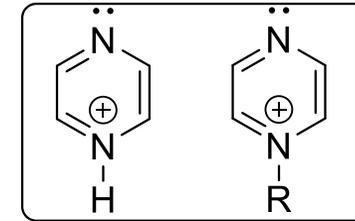
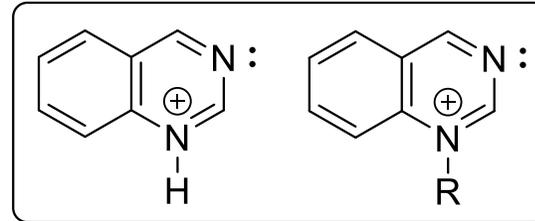
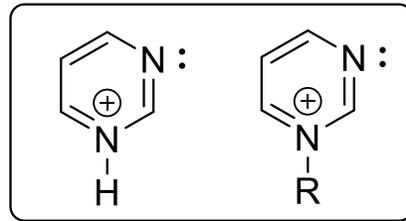
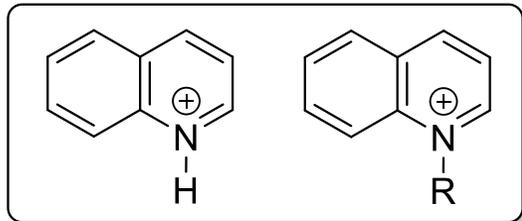
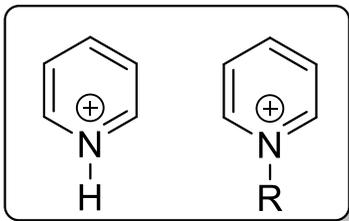
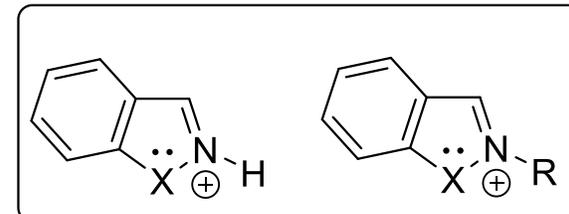
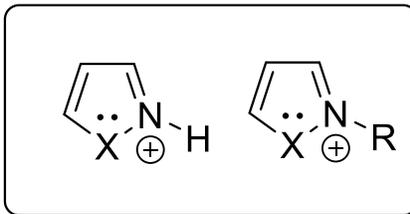
N-Óxidos en heterociclos con N nucleofílico



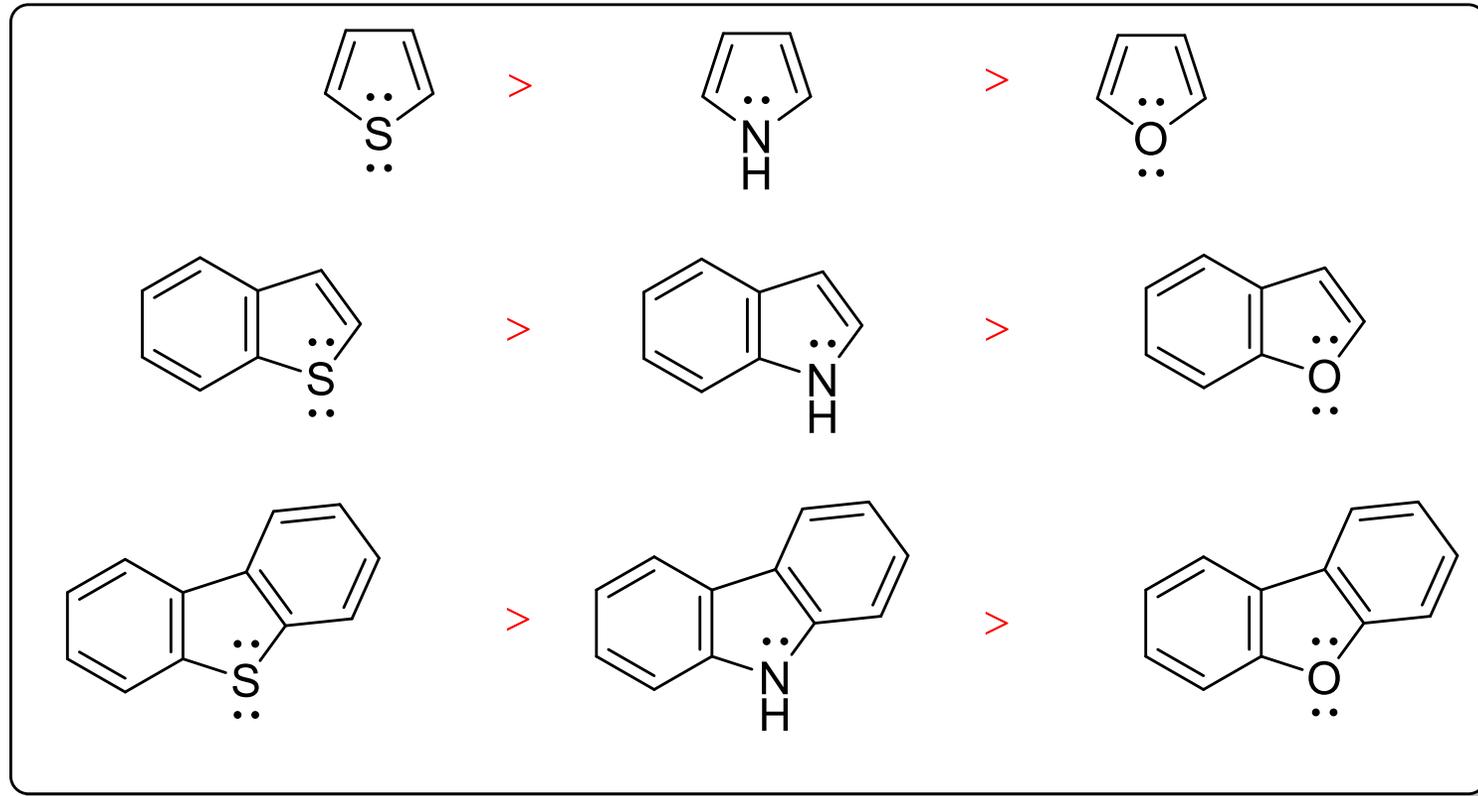
Formación de N-cación y cuaternización



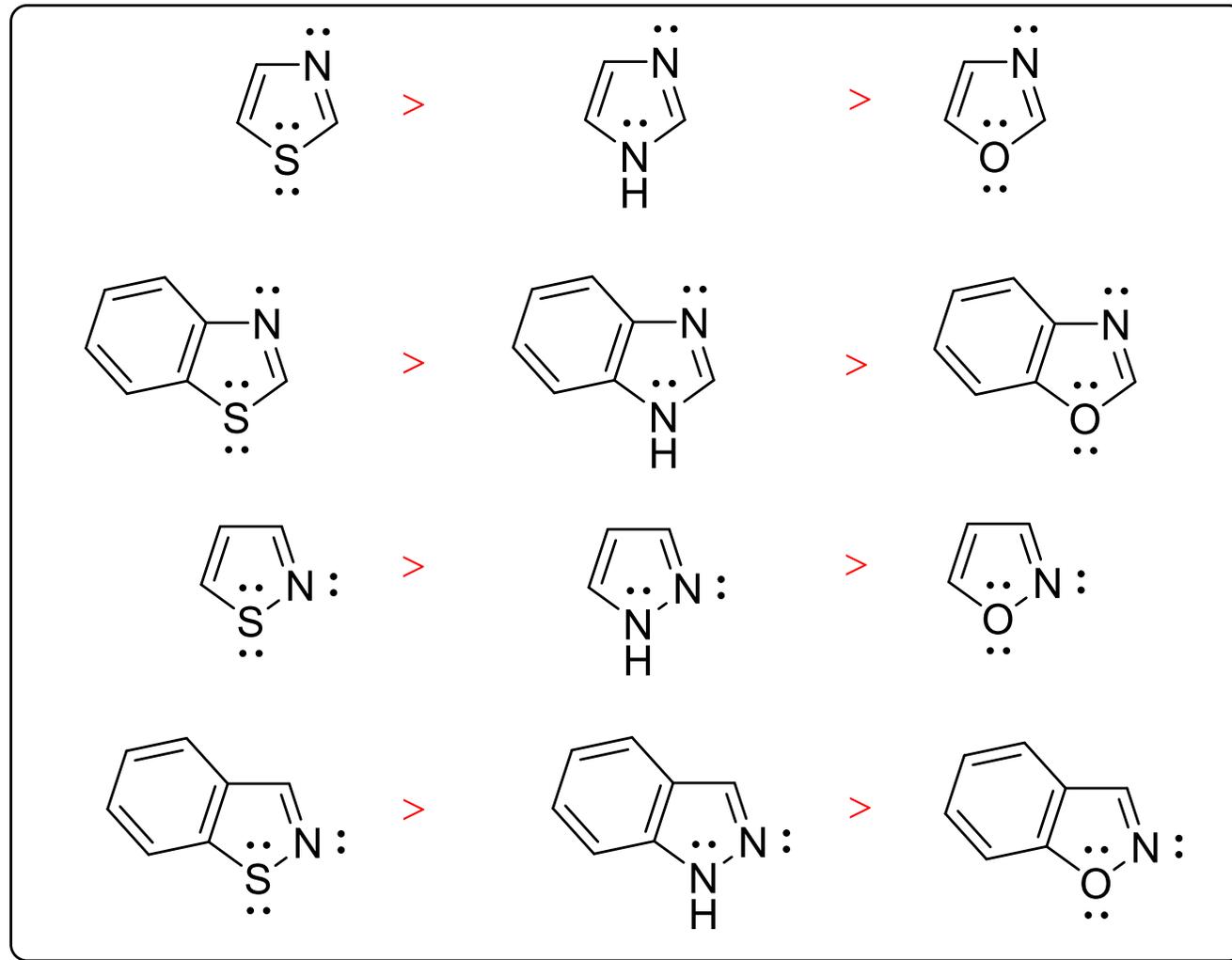
Two chemical structures of indazole cations. The first is the protonated form, indazole-H^+ , with a positive charge on the nitrogen atom bonded to a hydrogen atom. The second is the substituted form, indazole-R^+ , with a positive charge on the nitrogen atom bonded to an R group. Both structures show lone pairs on the nitrogen atoms and a substituent X at the 2-position.



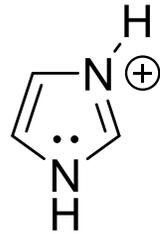
Aromaticidad I



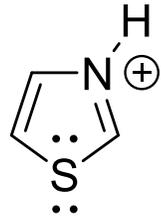
Aromaticidad II



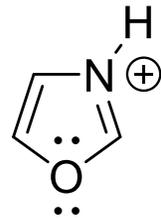
Basicidad



Imidazolio



Tiazolio

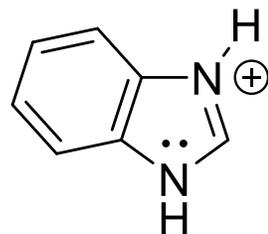


Oxazolio

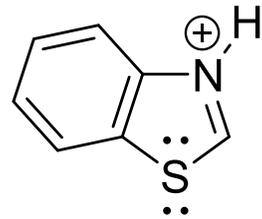
aumenta pK_a



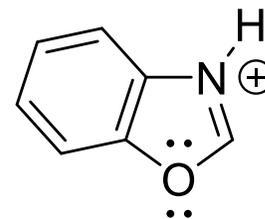
aumenta la basicidad



Bencimidazolio



Benzotiazolio



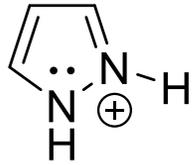
Benzoxazolio

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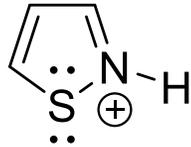


aumenta basicidad

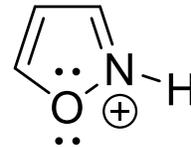
Basicidad



Pirazolio



Isotiazolio

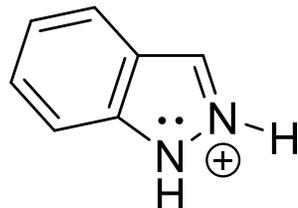


Isoxazolio

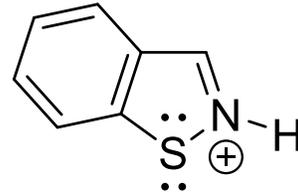
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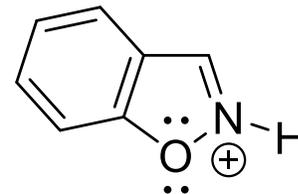
aumenta la basicidad



Benzopirazolio



Benzoisotiazolio



Benzisoxazolio

aumenta pK_a



aumenta la basicidad

Protonación de azoles dinitrogenados

