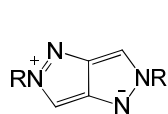


What are Heterocyclic Mesomeric Betaines?

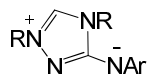
Christopher Ramsden

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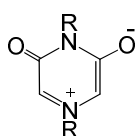
The structures shown below are all heterocyclic mesomeric betaines but they all have different general properties and they represent ten of the eleven distinct types of this class of heterocycle. Our systematic analysis identifies five discrete classes and associated subclasses. Each general class and subclass has different structural properties and reactivity profiles. In particular, it is important to distinguish between **Conjugated** (Class 1), **Cross-conjugated** (Classes 2 & 4) and **Semi-conjugated** (Classes 3 and 5) **mesomeric betaines**. Representatives of some classes are well known, others are rare and examples of a few are unknown. Together they account for a large area of heterocyclic chemistry. The common features and significant differences of the betaines shown will be discussed and our recent studies of (i) the aromaticity of semi-conjugated mesomeric betaines and (ii) mesomeric betaine/N-heterocyclic carbene tautomerism will be described.



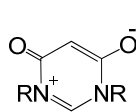
Class 1A



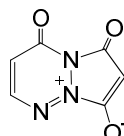
Class 1B



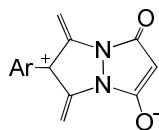
Class 1C



Class 2A



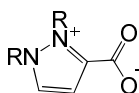
Class 2B



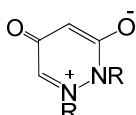
Class 2C



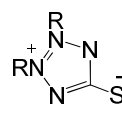
Class 3



Class 4A



Class 4B



Class 5