Cosying up to MoCo

Recently I received a request for a strain of *Aspergillus nidulans* carrying *cnxH* (1), a cryosensitive mutation affecting the synthesis of the molybdenum-containing cofactor (MoCo) common to nitrate reductase and purine hydroxylases I and II. As our *cnxH* strains had not been used for 15+ years, I considered it necessary to check partially the growth properties of revived cultures before distribution. This highlighted a minor error in the 1982 publication describing *cnxH* (1), correction of which has a potentially interesting ramification. Contrary to the “*” score shown for growth of *cnxH* strains on nitrate at 25 °C in Table 1 of that publication, *cnxH* strains do utilize nitrate at 25 °C, albeit markedly more poorly than wild-type strains. The thus corrected Table 1 data clearly indicate that the mutant phenotype of *cnxH* is more extreme under growth conditions requiring purine hydroxylase II activity (nicotinate as nitrogen source) or hypoxanthine as nitrogen source in the presence of nicotinate to induce purine hydroxylase II and allopurinol to inhibit purine hydroxylase I completely) than under growth conditions requiring purine hydroxylase I activity (hypoxanthine as nitrogen source) and least extreme under growth conditions requiring nitrate reductase activity (nitrate as nitrogen source). Assuming that synthesis of MoCo remains constant over this range of growth conditions, the differing stringency of the *cnxH* phenotype indicates a hierarchy of requirement for MoCo: least on nitrate and greatest on nicotinate or hypoxanthine in the presence of nicotinate and allopurinol. A plausible explanation would be that nitrate reductase is best at cosying up to MoCo (i.e. has greatest affinity for MoCo) and that purine hydroxylase II is the most reticent suitor (assuming, of course, equal MoCo-binding stoichiometries in each case).

Previous work with a thermosensitive *cnxH* mutation suggested that the quantitative requirement of purine hydroxylases I and II for MoCo might be more stringent than that of nitrate reductase (2–4). Thus the phenotype of a cryosensitive *cnxH* allele corroborates and extends a proposal based on work with a thermosensitive *cnxH* allele.

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