P033 Molybdate transport in *Bradyrhizobium japonicum*

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Nitrate reductase and nitrogenase are two molybdoenzymes with critical roles in free-living and symbiotic rhizobia species. Despiste the importance of Mo in N_2 fixation, there is very little information on how rhizobia acquire molybdenum. We have identified the *modABC* genes of *B. japonicum* encoding the components of an ABC-type high-affinity Mo transporter. Either a *modA* or a *modB* mutant strains were unable to grow anaerobically with nitrate as respiratory substrate when Mo concentrations were ≤ 0,3μM. Under these conditions *modA* and *modB* mutant strains did not showed nitrate reductase activity. Those mutations also affected nitrogen fixation activity of the nodules of soybean plants grown in ≤ 0,4μM Mo. The addition of Mo to the bacteria growth medium or to the plant nutrient solution fully restored the wild type phenotype. The amount of Mo needed for the suppression of the mutants phenotype depends on the sulfate concentration in the medium. In *B. japonicum* the transcription of the *modABC* genes is repressed by Mo. We propose that *B. japonicum* possesses at least two independent systems for Mo uptake, a high-affinity system codified by the *modABC* genes, and a lower affinity system most probably related with the sulfate transporter.