Subgroup II human septins 6, 8 and 11 bind and hydrolyze GTP in a lower rate than human septin 2

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G proteins are a superfamily of proteins that binds and hydrolyses GTP. These proteins are involved in most of the cellular process. Septins are GTP binding proteins that were first identified in yeast at the mother bud neck. In humans, 14 septins are known and named sept1-14. They play a role in cell cycle and vesicular traffic, and are associated with some diseases as Alzheimer's disease, Down's syndromes, Parkinson's disease and some tumors. Septin can form homo- and hetero- filaments and GTP binding seems related to formation of such filamentous structures. GTP binding is also important to phosphatidylinositol polyphosphate binding by some human septins. The 14 human septins are divided in 4 subgroups based on their primary sequence. Sept 6, 8 and 11 belong to subgroup II; this group has a threonine instead of a serine in the P-loop sequence. The influence of this polymorphism in GTPase activity is not known. Some mutations in GTPases lead to lack of activity and some reports associate the expression of such proteins to tumor. Once little is known about the binding affinity and hydrolyzes of human septins, we analyzed the GTP binding and hydrolysis activity by septins 2, 6, 8, and 11. We observed that septin 6, 8 and 11 are able to bind GTP at different temperatures. Those proteins also have GTPase activity, however the level of binding and hydrolysis is smaller than the rates observed for human septin 2.