Fractional Lévy process is a relatively new term from stochastic calculus. Its main use is in physics, but also in finance, where it could be used for modelling of option prices. Fractional Lévy process is derived from Lévy process, where Wiener process is replaced with fractional Wiener process. In comparison with Lévy process, it loses independency of increments and in comparison with fractional Wiener proces, it loses continuity of paths. This bachelor thesis is mainly written as a compilation, which summarizes necessary knowledge for the exploration of Lévy process and the implementation of fractional Lévy process.