Development of a purification process of recombinant human granulocyte macrophage colony stimulating factor from recombinant rice cell culture

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Plant cell culture has some advantages: lower risks of infection from the bacterial toxins and mammalian viral contaminants, and production of correctly folded and post-translationally modified proteins. On the other hands, plant cell culture has some disadvantages including: low expression titer and difficulties in purification. We developed a purification process for rhGM-CSF from recombinant rice cell culture. First, acid precipitation process was conducted to remove alpha-amylase co-expressed with rhGM-CSF. The precipitation was done at a low pH(4.5), and 25% ammonium sulfate saturation. To concentrate and dialyze the supernatant from the precipitation process, 10 kDa diafiltration was performed. To remove non-rhGM-CSF proteins, anion exchange chromatography (Q-Sepharose XL) was done. 30 kDa and 36 kDa impurities were effectively removed. Gel filtration chromatography (Superdex G75) was followed. As the last purification step, SEC-HPLC was used. This step showed the potential of rhGM-CSF purification for over 95% purity.