

PROCESS FOR OBTAINING FUNCTIONALIZED CHITOSAN WITH DIHYDROXYFUMARIC ACID

PATENT APPLICATION: MD a 2021 0048/2021.07.16

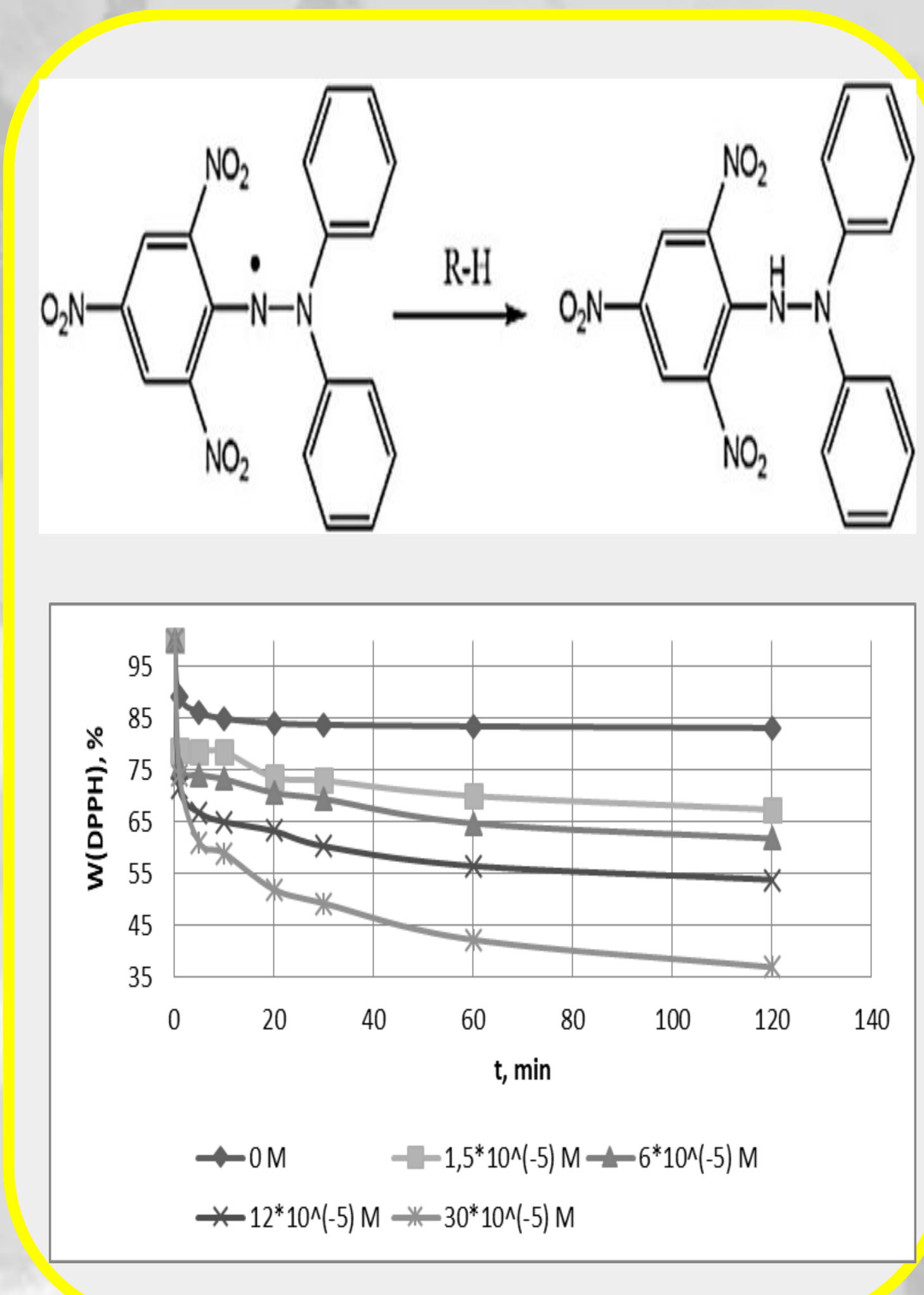
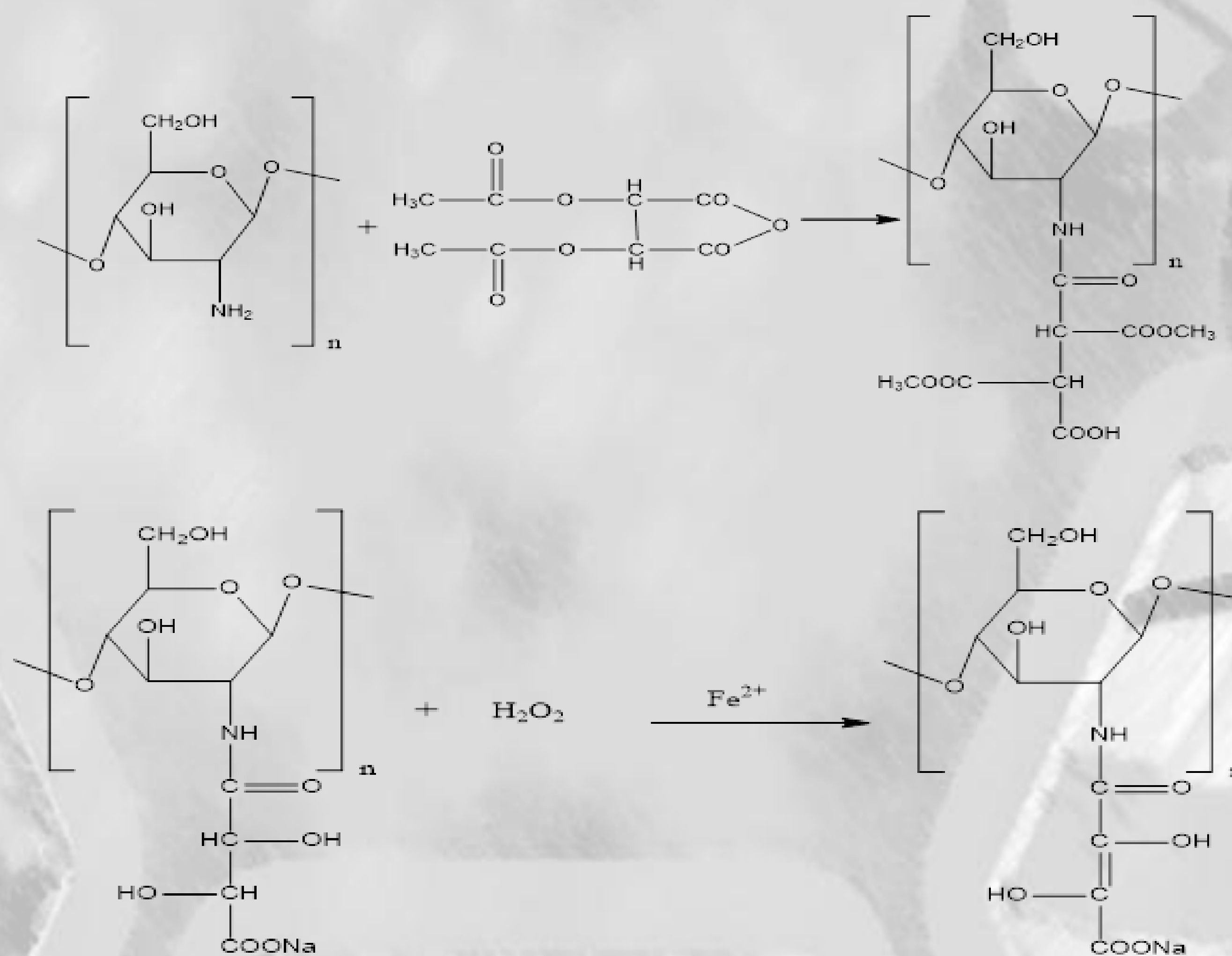
AUTHORS: Maria GONȚA, Iacob GUȚU, Mihai CEACÎRU

APPLICATION FIELDS: As an antioxidant in the cosmetic, food, pharmaceutical and biomedical technology.

AIM: Functionalization of chitosan with dihydroxyfumaric acid to obtain a polymeric composite with antioxidant properties.

SOLUTION: The new process of functionalization of chitosan with dihydroxyfumaric acid includes N-acylation of chitosan with diacetyl tartaric anhydride. Afterwards, chitosan with diacetyltartaric acid (Cht-ADAT) obtained undergo functionalization of chitosan by elimination of acetylated chitosan (Cht-ADAT) in alkaline hydrolysis media. In result we have synthesized chitosan functionalized with tartaric acid (Cht.AT), which was oxidated with cold Fenton reagent to obtain Cht-DFH2Na.

It was found that the concentration of the oxidative particle of DPPH, consumed over time at the interaction with non-functionalized DFH2Na is lower compared to the consumption of DPPH for CH: DFH2Na. Thus, we find that the CH: DFH2Na copolymer is about 2.5 times more active than DFH2Na.



Mechanisms of interaction of DPPH with reducing agents and formation of copolymer CH : DFH2Na

ADVANTAGES: In the proposed process the reactions are carried out in liquid phase which leads to an increase in the yield of the reaction. The formed product, chitosan with dihydroxyfumaric acid, shows antioxidant properties. Cheap reagents (tartaric acid, sodium hydroxide and hydrogen peroxide) are used and a high reaction yield product is obtained.

IMPLEMENTATION STAGE: In laboratory stage.

ACKNOWLEDGMENTS: This research was supported by the STCU research project # 6377.