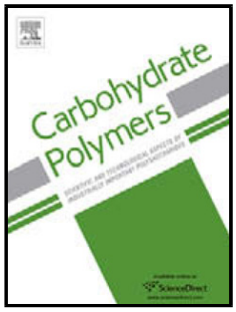

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PII: S0144-8617(18)30293-5
DOI: https://doi.org/10.1016/j.carbpol.2018.03.037
Reference: CARP 13387

To appear in:

Received date: 14-12-2017
Revised date: 9-2-2018
Accepted date: 14-3-2018

Please cite this article as: Attia, Yasser A., Kobeasy, Mohamed I., & Samer, Mohamed., Evaluation of magnetic nanoparticles influence on hyaluronic acid production from Streptococcus equi.*Carbohydrate Polymers* https://doi.org/10.1016/j.carbpol.2018.03.037

Evaluation of magnetic nanoparticles influence on hyaluronic acid production from *Streptococcus equi*

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Highlights

- Novel HA production method was developed using magnetic nanoparticles
- The highest HA dry weight was obtained with the addition of 20 mg/l of Fe_3O_4 NPs
- Separately, HA was produced with the addition of amino acids as bio-additives
- The highest HA dry weight was obtained with the addition of glutamic acid (GA)
- Fe_3O_4-GA NPs produced the highest HA dry weight among all treatments

Abstract

This work aims at developing a novel hyaluronic acid (HA) production method using magnetic nanoparticles (NPs). In a separate process, HA was produced with the addition of the amino acids (AA) as bio-additives. Regarding the NPs additives, the results showed that the highest dry weight of the produced HA was 0.264 g/l with the addition of 20 mg/l of Fe_3O_4 NPs. Concerning the AA additives, the results showed that the highest dry weight of the produced HA was 0.079 g/l with the addition of 0.26 g/l of glutamic acid (GA) compared to the control produced 0.065 g/l. These results led to further develop a novel HA production method which is preparing the Fe_3O_4 NPs using GA as stabilizer, where the results showed that dry weight of the produced HA was 0.435 g/l with the addition of 20 mg/l of Fe_3O_4-GA NPs.