OPEN ACCESS Freely available online

Organic Chemistry: Current Research

Short Communication

Phenols

Sudha M

Department of Organic Chemistry, Vivekavardhini College, Kothagudem, Telangana, India

ABSTRACT

Sorption of phenolic compounds may be a very complex process and lots of factors influence it. At the start , detailed chemical structure of phenols is presented with its consequence for physical properties, for instance , values of melting and boiling points, solubility in water, pKa and Log P. Also influence of activating and deactivating substituents on the properties is explained. On this basis, interaction with the foremost frequently used sorbents, for instance , chemically modified silicas, polymers and porous carbons, is described. Both sorbents characteristics including physical (porosity) and chemical properties (functional groups) and experimental conditions like concentration of solutes, contact time, temperature, solvent effects and presence or absence of oxygen are taken under consideration . the reasons of irreversible adsorption and oxidative coupling phenomena are included. The mechanisms of phenolic compounds sorption are described.

Keywords: Environmental matrices; Uses

INTRODUCTION

There is an enormous sort of phenolic compounds in our natural environment. Some like eugenol, thymol, pyrogallol, guaiacol or pyrocatechol are formed in natural way, but a huge majority of them are introduced as a consequence of commercial, agricultural and communal activities of humans. While the previous are neutralized because the results of natural processes, the latter pose a significant risk to the environment.

Quantitative isolation of phenol and its derivatives from environmental matrices is typically difficult due to considerably different properties and low concentration. It had been a stimulus to development of research on process of sorption and look for efficient sorptive materials.

This chapter is dedicated to review of current state of data on sorption process of phenolic compounds. Many various sorts of sorbents are used for phenols in chromatographic columns and solid phase extraction devices. Their efficiency is diverse and depends on many factors. Because the most vital chemical structure of adsorbate, a kind of sorbent and its porosity also as properties of solvent (or eluent) should be mentioned. Also other properties like pH, temperature and presence of oxygen influence the method. For this reason, sorption of phenols may be a very complex phenomenon. Although many researchers attempt to explain the mechanism of interaction of phenols with adsorbents, it's still an open problem.

Many groups of researchers tried to unravel it using different scientific methods, for instance, chromatography, spectroscopy (UV, mass spectrometry [MS], Fourier transform infrared spectroscopy [FTIR]), thermal analysis, and computer simulations. Supported the obtained results, some authors proposed explanations of phenomena and mechanisms accompanying the sorption of phenol. Understanding the mechanism is vital from scientific point of view. Elucidation of this process is important for reasons of utility and finding a solution to the questions the way to improve efficiency of sorption phenolic compounds within the processes of aqueous environment remediation. Effective removal of those species from industrial and concrete waste water helps to guard aquatic ecosystem from toxic impact of phenols on the living organisms, which is a crucial aim everywhere the planet.

The change in pH affects chemistry of both the adsorbate and therefore the adsorbent by shifting the equilibrium dissociation process of solutes and surface functional groups of the sorbent towards ionized or unionized form. Thus, adsorption of phenols is restricted by the acid-base characteristic of the adsorbent and its microporosity, which subsequently influences

***Correspondence to:**Sudha M, Department of Organic Chemistry, Vivekavardhini College, Kothagudem, Telangana, India, E-mail: sudhamantri29@gmail.com

Received date: June 05, 2020; **Accepted date:**June 20, 2020; **Published date:**June 27, 2020

Citation: Sudha M (2020) Phenols. Organic Chem Curr Res. 9:209.DOI: 10.35248/2161-0401.20.9.209

kinetics and effectiveness of the general process. Higher values of uptake are observed for the compounds in undissociated form. Therefore, most of phenols like weak acids are better adsorbed from neutral or acidic solutions. At lower pH values, oxonium ions are present in solution and that they prevent dissociation of surface acidic groups. In these conditions, formation of hydrogen bonds and π-π interactions between phenolic adsorbates and sorbent surface is privileged. Accordingly, adsorption capacity is that the highest . an equivalent applies to phenols, their transition point between acidic and basic form is related to their pKa value. Below this value dominates acidic form and above it the conjugated base-phenoxide ion takes advantage.

CONCLUSION

A lot of research project was performed so as to review and understand the method of sorption of phenolic compounds. This chapter presents the complexity of this process and shows what percentage various factors have influence thereon . The start line is chemical structure and overview of physical and chemical properties of phenol and its ring-substituted derivatives.

REFERENCES

1. Murkovic M. PHENOLIC COMPOUNDS. Encyclo food Nutri. 2003: 4507-4514.