

1 **Characterization of humic substances and their distribution of XAD fractions by**
2 **absorption spectroscopy in the Godavari estuary, India.**

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26 **Abstract**

27 Humic substances (HS) are formed in estuarine regions by biogeochemical processes of
28 terrestrial and *in situ* produced organic matters. Their structure and distribution may vary
29 seasonally and spatially. To examine this, HS were isolated from the Godavari estuarine
30 waters using the ion-exchange resins XAD-8 followed by XAD-4 during the year 2014-15.
31 The structural differences between the two fractions were characterized by E_2/E_3 ratio
32 (a_{250}/a_{365}), spectral slope ($S_{275-295}$), and spectral slope ratio (S_R , $S_{275-295}/S_{350-400}$), which were
33 derived from UV-Visible absorbance spectra. Lower values of E_2/E_3 ratio, $S_{275-295}$ and S_R for
34 XAD-8 fractions than XAD-4, indicate higher aromaticity and higher molecular weight of
35 dissolved organic compounds retained on the former resin. The E_2/E_3 ratio for XAD-8 and
36 S_R for XAD-4 fractions were found to decrease gradually from post monsoon to monsoon
37 season indicating that the biological process controls the production of organic matter in the
38 upstream waters. Lower molecular weight organic compounds formed by bacterial decay and
39 photo degradation during pre-monsoon season and higher molecular weight organic
40 compounds formed during the post monsoon season attributed to the freshly exudated organic
41 matter from phytoplankton dominated at the mouth of the estuary.

42 **Keywords:** Absorbance Spectra; E_2/E_3 ratio; Spectral Slope ratio; Godavari Estuary.

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