Water and Life, Both Animal and Vegetal
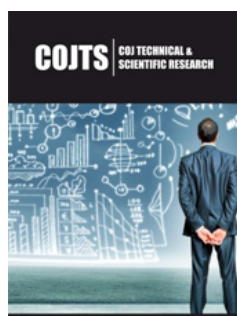
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Introduction

The existence of the thermodynamic potential μsolv for Implicit Solvent is bound to the existence of a layer of molecular arrangements (icebergs), typical of water when behaving as Implicit Solvent, The Icebergs formed when a gas or other molecular unit, even of size of a protein, enters in the Implicit Solvent water. The icebergs react again with the Implicit Solvent at constant thermodynamic potential μsolv. Completing the complex iceberg around the entering unit. This interpretation of the structure of water as Implicit Solvent is new, as far as we know, and very profitable. This study is a development of the paper recently published where we had performed a statistical analysis of a set of eighty-one compounds, according to the rules of Chemometric Analysis of Variance. That analysis had leaded us to conclude that, notwithstanding the remarkable difference between one another group in structure, in molecular size, in aggregation state, the motive functions of all the groups, show similar properties. The new paper is concerning the equilibrium constants of Chemical and Biological Hydrophobic Hydration Processes. In the new manuscript, we are developing the table of a previous paper, containing thermal equivalent dilution. This name, attributed by us to this table, is not satisfactory (the name is not satisfactory, but the reported numbers are correct) and we are proposing to call that table as Ergodic Algorithmic Model for Symmetrical Hyperbolas. We show, in this new paper, that every determination of equilibrium constant examined in this Laboratory is concerning only with compounds presenting, in their partition function, Symmetrical Hyperbolas. This result is an important general conclusion, that we hope will be appreciated and used by many researchers [Figure 1].
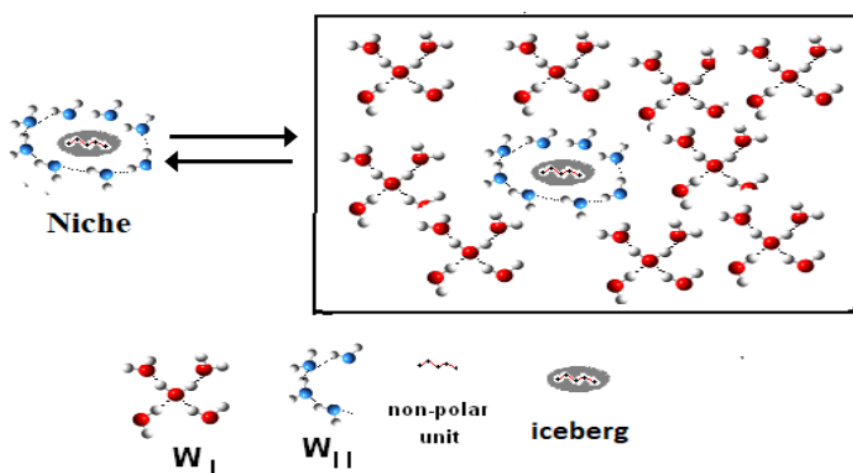
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Figure 1: Iceberg Formation, if a molecular unit enters in water, that behaves as Implicit Solvent.

We demonstrate also that the out-of-diagonal point A or B or C is Inexistent. We mean Inexistent Point, at least for the validated chemo-metric lot of our compounds, because this

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lot is referred exclusively, at 100% probability, to compounds with symmetrical hyperbolas, with exclusion of any other molecular arrangement. The results of the chemometric statistical analysis of errors renders our results as having the strength of a general law. The paper will be composed of three parts, distinct but logically connected to one another.

a)   In the first part, we are showing how the introduction of the character of Implicit Solvent for water, guarantees the introduction in the system of a separated phase at constant thermodynamic potential μSolv, thus giving rise, for the implicit solvent water, to a layer with the character of a separate phase, at constant Thermodynamic Potential, μSolv.

b)   The property of forming a "separate phase" depends on the capacity of water, or better on that part of water which is at constant Thermodynamic Potential, μSolv of giving rise to living systems either animal or vegetal. Only water, as a separate phase with the property of implicit solvent, has the capacity of transmitting life. both vegetal and animal life. We are calling your attention on this point with the purpose of helping you in your choices of molecular events.

c)   In the third part of the paper, we will show how the different types of water complexes (WII) are reflected in the structures of icebergs, hydrated complexes around molecular units (gas or solid) entering in the solution. Only symmetrical hyperbolic functions have been found in the hole set, statistically validated, of compounds studied in this laboratory.

We note that Implicit solvent is formed whenever the solvent is in excess of any other component, and its properties are no more dependent of its concentration.