Studies on transition metal complexes of some hydrazine compounds

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-I.1. Literature survey on the 1,3,5-triazines 1,3,5 - Triazine derivatives, also called s triazine, had been known(1) for a long period of time, they have found widespread applications in the pharmaceutical, textile, plastic, and rubber industries, and are used as pesticides, dyestuffs, optical bleaches, explosives, and surface active agents. these compounds are recognized also to be powerful chelating agents, which can be used as liquid crystals, metal complexes, and as new hydrogenation catalysts, 1,3,5-triazine derivatives are widely used as herbicides(2), drugs or polymers like melamineformaldehyde that has excellent thermal and electrical properties. Furthermore, a very large number of supramolecular noncovalently bond assemblies between melamine and barbituric or cyanuric acid derivatives had been reported, but only a few examples of 1,3,5-triazine-containing ligands had been published so far s-triazine ring compounds(3) are common industrial chemicals in pesticides, resin intermediates, dyes, and explosives, the fate of these compounds in the environment is directly correlated with the ability of microbes to metabolize them. microbes metabolize melamine and the triazine herbicides such as a trazine via enzyme - catalyzed hydrolysis reactions. hydrolytic removal of substituents on the s-triazine ring is catalyzed by enzymes from the amidohydrolase superfamily and yields cyanuric acid as an intermediate, cyanuric acid is hydrolytically processed to yield 3 mol each of ammonia and carbon dioxide. Cytotoxicity of 1,3,5-triazine derivatives is well known as hexamethylmelamine (HMM) (6) which was discovered as an effective agent against breast, lung and ovarian cancer but it causes many adverse effects such as nausea, vomiting, anorexia and abdominal cramps(4). Irsogladine (7) has been shown to have anti-tumor activity in murine xenograft models of epidermoid cancer and glioma(5). More recently, the effect of compound (7) was also investigated in a human breast cancer athymic nude mouse system and the results suggested that irsogladine can be useful in the breast cancer adjuvant setting, moon et al(6), reported compound (8) as a microtubule destabilizing agent with potent growth inhibition against U936 cells (GI50 = 1 mM)(7). MAP kinase inhibitory activity(7) of (9), inhibitory potency of (10) against various cyclin dependent kinases(8) and VEGF-R2 (KDR) tyrosine kinase inhibitory activity(9) of (11) had also been reported recently (scheme 1) Scheme 1. Previously reported anticancer 1,3,5 - triazine derivatives the chemistry of this group of compounds had been studied intensively and was the subject of many reviews. the atoms in triazine rings are analogous to those in benzene rings, which makes

triazines aromatic compounds like benzene the most common derivative of 1,3,5 - triazine is 2,4,6-triamino - 1,3,5 - triazine, commonly known as melamine or cyanuramide. trichloro - 1,3,5 - triazine is the starting point for the manufacture of many herbicides such as Simazine, another important derivative is 2,4,6 -trihydroxy - 1,3,5 - triazine better known as cyanuric acid, the 1,3,5 -triazine is one of three triazines, the two other isomers being 1,2,3 - triazine and 1,2,4-triazine; scheme 2 Scheme 2- Despite the fact that 1,3,5 riazines are one of the oldest known(10) classes of organic molecules, nowadays, there are some problems in their practical preparation. Some s -triazine derivatives can be prepared from the cheap, readily available cyanuric chloride, that is, 2,4,6 -trichloro - 1,3,5 - triazine, however, the stepwise replacement of the three chlorines is sometimes unreliable and leads to mixtures, this ring system had drawn considerable interest due to its ease of manipulation and the low price of the starting materials, the use of microwave irradiation for organic syntheses has improved the yields and purity of this class of organic compounds all of the s-triazine derivatives that had wide practical applications are 2,4,6 - mono, di- or tri - substituted, symmetrical and nonsymmetrical compounds bearing different substituents, the most important reagent for obtaining these compounds is cyanuric chloride because of the reactivity of its chlorine atoms toward nucleophiles. It is also important to stress that cyanuric chloride is commercially available and is very inexpensive reagent, which makes its applications even more attractive ,Koc et al(11) synthesized four new tripodal-benzimidazole derivatives by Schiff base reaction between 2,4,6 - tris(p-formylphenoxy)-1,3,5-triazine (TRIPOD) and different diamine derivatives. The structures of the obtained compounds were identified by FTIR, 1H NMR, 13C NMR, UV–vis spectral data, thermal analysis and elemental analysis, Electrochemical behaviors of the compounds were studied by cyclic voltammetry in DMF including 0.1M [NBu4] [PF6]. In addition, their antimicrobial activities were evaluated by using the standard disk diffusion method in dimethylformamide media, the activities were determined against 4 bacteria cultures by comparing to those of gentamycin, various 2 - phenyloxy - 4,6-bisarylhydrazino -1,3,5 - triazines(3a - f) were prepared by Chaudhari et al (2) via the reaction of 2- phenyloxy - 4,6 - dichloro - 1,3,5-triazine and various aryl hydrazine derivatives, all the 3a-f derivatives were characterized by elemental analysis and IR spectral studies, all the compounds were screened for microbial activity against gram-positive and gram-negative bacteria, Number of derivatives containing s -triazine ring had been reported as heterocyclic compounds they are applicable mostly as reactive dyes and some are used as polymers and drugs, milton et al(12) synthesized a class of 2,4,6-ris(arylchalcogeno) - 1,3,5 -triazine (sulfur, selenium and tellurium) and 1,3,5-tris(arylchalcogeno)-2,4,6-trimethylbenzene (sulfur and selenium) containing ligands based on the reaction of 2,4,6 - trichloro-1,3,5-triazine and 1,3,5 - tris(bromomethyl)- 2,4,6- trimethyl - benzene with the corresponding arylchalcogenide anions in aqueous tetrahydrofuran. Physicochemical studies, 1H and 13C NMR spectral data and spectral studies were studied on the synthesized compounds I.2. Literature survey on lanthanide ions under investigation the chemistry of the trivalent lanthanide ions has expanded rapidly in the last 40 years, the interest in the lanthanide complexes is chiefly ruled by their promising utilization due to their low toxicity and their

powerful paramagnetic and luminescent properties(13 Even though the lanthanide complexes are associated with important biological uses as diagnostic tools. It is known that a considerable amount of work had been done on complexes with hydrazones because of their ability to chelate with metal ions(14), lanthanides or lanthanons form alongest series of the periodic table, It is 4f -inner transition series. Lanthanide (III) ions, because of their size and charge are the best ions to form stable complexes with high coordination number(15). Coordination compounds of lanthanide in which lanthanide ions exhibit coordination number 6 to 10 the structural chemistry of the lanthanide compounds has recently undergone considerable development and a wide variety.