College: Pharmacy
Degree: PhD

No	Name	Title	Degree	year
1	Alaadin Muhamad Alaadin	Phytochemical and bioactivity studies of the Iraqi Rheum ribes root grown wildly in Kurdistan region	PhD.	2007
2	Ansam Naji Aboud	An Investigation of Pesticides, Drugs, and Zinc in Biological Fluids	PhD.	2008
3	Abdulkadir Aziz Hassan Alnakshabandi	Prevalence of anti-phospholipid antibodies among β- thalassemia major patients in Hawler province	PhD.	2009

Phytochemical and bioactivity studies of the Iraqi Rheum ribes root grown wildly in Kurdistan region

Name: Alaadin Muhamad Alaadin Naqishbandi
Nature of the search: Academic
Degree: PhD
Specialty:
Subspecialty: Pharmacognosy
Date the discussion: 5/9/2007
Supervisor: Assistant Professor Ekbal Hasan Alkhateeb

Abstract

The aim of the present work is the phytochemical investigation of the root of Rheum ribes, to isolate and identify as much as possible the main constituents and to study their biological activities. A variety of natural product groups have been isolated from Rheum species, which belong to such classes as anthraquinone, stilbenes, flavonoids, polyphenols and essential oils. A review on these types of natural products and their occurrence in the genus of rheum was carried out. R. ribes, the Iraqi species of rhubarb, is the source of one of the most important crude drugs in Asian regions, a survey of traditional and medicinal uses along with the previous phytochemical studies on this plant is presented. The main active constituents from the dried powdered root of R. ribes were extracted by refluxing with 80 % ethanol, yielding (13.3 %) total extract (TE). Liquid partitioning of total extract between $CHCl_3$: H_2O yielded (0.76 %) of chloroform extract (CE1), and (12.55 %) aqueous fraction (AE). The aqueous fraction was hydrolysed by refluxing with 60% $FeCl_3$ and 5N HCl, yielding (0.29 %) of $CHCl_3$ fraction (CE2) after partitioning. The active constituents from CE1 and CE2 extracts were separated by TLC, four anthraquinone components were identified as the main constituents and their Rf values were recorded as 0.24, 0.37, 0.71 and 0.8. The four antharquinone components were separated, isolated quantitatively by preparative TLC and Quantitative HPLC, and identified as aloe emodin, emodin, chrysophanol and physcion by measuring their melting points, 1H NMR and GC-MS spectra. Emodin is for the first time recorded in this species. The aqueous extract (AE) containing the glycosides of aloe emodin, emodin, chrysophanol and physcion, the main active constituents in this fraction were separated, detected by TLC and three of which where isolated by CC and preparative TLC techniques and their 1H NMR spectra were recorded. The percentages of aloe emodin, emodin, chrysophanol and physcion as a free anthraquinone derivative in R. ribes root were determined by HPLC technique as 0.39 %, 0.014 %, 0.089 % and 0.072 % respectively. Agar overlaying bioautography method was used for the biological evaluation of TE, AE, CE1 and CE2 extracts from R. ribes root against two types of gram positive bacteria, two types of gram negative bacteria and one type of fungi. The CE1 and CE2 extracts showed inhibition against Staphylococcus aureus, and Escherichia coli, only very weak activity of CE1 and CE2 against Pseudomonous aeruginosa and no activity against Bacillus subtilus and Candida albican were observed, TE and AE did not show any activity. Finally, micro-dilution technique was used for determination of MIC values of the biologically active extracts and the isolated antharquinone derivatives. The MIC values for CE1, CE2, aloe emodin, and emodin were 500, 125, 250, and 63 <g/ml against Staphylococcus aureus, respectively. The extracts and compounds did not inhibit Pseudomonous aeruginosa and Escherichia coli at the highest concentration 4000 and 250 <g/ml, tested, respectively. The phytochemical and bioactivity results obtained supports the medicinal properties the Iraqi species of rhubarb that can be recognized as an official medicinal plant in herbal pharmacopeias.

An Investigation of Pesticides, Drugs, and Zinc in Biological Fluids

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College: Pharmacy
Nature of the research: Academic
Degree: M.Sc
Specialty: Toxicology
Date of the discussion: 14/6/2008
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Abstract

The aim of this study is to give generalized information regarding the operation of toxicological laboratory, emphasizing on selected areas such as occupational and clinical toxicology. Proper samples for analysis, methods and techniques used by the laboratory, and the interpretation of data are the target of this experience. Plan of the work is categorized in four chapters each one has an identity related to toxicology from different angle. Measurement of the enzyme activity in samples obtained from human exposed to harmful chemicals in their work such as pesticides especially the compounds inhibited cholinesterase enzyme activity e.g. organophosphates and carbonate insecticides is spotlighted in chapter one. One hundred sixty nine workers show significant decrease ($P<0.05$) in ChE activities than control group. No significant correlation was found between ages and ChE of all groups. Also no significant correlation was detected between males and females for all groups. Warfarin anticoagulant drug which is used in therapy for patients with thromboembolic diseases; and also warfarin constituted in rodenticides which is used to control rodent in agriculture and other fields, this may cause high danger to toddlers when they ingest the rodent baits and/or warfarin drug accident, also encountered in this study, chapter two, Shows significant increase in prothrombin time ($P<0.05$) for 85 patients treated either with warfarin , or warfarin with aspirin, or warfarin with ciprofloxacin, in comparison with control group. While, there were no significant differences detected in prothrombin time for thirty patients treated with aspirin, and 33 patients with renal failure in comparison with control group. Zinc metal in normal and abnormal levels as a part of human health, these levels may changed (elevated or decreased) due to the place of work, polluted environment, and in same diseases; also included in this work, chapter three, Shows significant decrease ($P<0.05$) in serum zinc level for 186 patients having either warts or cardiovascular problem, or leukemic patients in comparison with control group. No significant correlation was found between ages and serum zinc level in all groups. Also no significant correlation was detected between males and females for all groups. Drugs in routine prescribed by doctors, and in every day medical use such as aspirin, diazepam, paracetamol, tofranil, and so on, also involved in chapter four, in which, thin layer chromatographic (TLC) teats were applied to investigate the normal and abnormal doses in clinical use, abuse, misuse, accidental, and suicidal cases. All these uses may produce intoxication problems, and then the investigation of such drugs by using TLC technique is of prime importance. Chapter four tests were carried for 16 drugs, acidic and basic extract were performed chromatogram on thin layer plates with standards, then the Rf values were measured. All the measurements and tests have been carried out during the work on blood, plasma and serum, samples (biological fluids) obtained from humans in both control studies and patients who use different types of drugs or exposed to toxicants during their life activity (work) and some time through abnormal conditions in their health status. From the above headlines of the work, it is clear that a large number of chemicals and drugs we dealt with, this work hopefully can satisfy the meaning of the title of the thesis:
"An investigation of poisons, drugs, and metals in biological fluids"

Prevalence of anti-phospholipid antibodies among β- thalassemia major patients in Hawler province

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Nature of the research: Academic
Degree: M.Sc
Specialty: Toxicology
Date of the discussion: 14/6/2008
Supervisor: Professor Dr. Anwar Sheikha
                   Professor Dr. Muayad Sawa

Abstract

Objectives:
1. To determine the frequency and concentration of anti-phospholipid antibodies among Hepatitis C virus (HCV) positive patients with thalassemia and HCV negative patients.
2. To identify the type of antiphospholipid and to assess whether it is β2GP1 dependent or independent.
3. To find out any concomitant effect of HCV and iron overload and abnormal morphology of red cells on generation of anti-phospholipid antibodies.
4. To find out the effect of HCV and iron overload on liver enzymes.
5. To study the frequency of HCV infection among thalassemic patients in Hawler province.

Subjects and methods: From a total number of 430 thalassemia patients in the Hawler province who they were visiting the thalassemia unit in order to receive blood transfusion, a resprsentive sample of 176 patients (116 males and 60 females) with age ranged from 2-31 years were chosen for this prospective study during the period from 1-12-2005 to 1-1-2007. All patients were proved to have homozygous β- thalassemia; 88 of these patients proved to have hepatitis C infection. In the current study the serological aspects of hepatitis C virus infection in thalassemic patients in Hawler province were approached using third generation ELISA method. Confirmatory test (RIBA) was done for all positive HCV infected patients as well as Ag-Ab test used for the first time
in Hawler province for both hepatitis C thalassemic patients as a confirmatory test and thalassemic patients without hepatitis C for early detection of virus antigen. RNA PCR was also estimated for (40) HCV infected thalassemic patients. IgG and IgM anticardiolipin (aCL), IgG and IgM Antiphosphatidyl serine (aPS), and IgG and IgM β2-Glycoprotein 1(β2GP1) antibodies measurement were employed for (88) thalassemic patients positive for HCV infection as well as for (88) thalassemic patients negative for HCV infection were estimated. Also serum ferritin and liver enzymes(AP, ALT and AST) were estimated for both groups in comparison to the unit of blood transfusion taken.

Results:
1. Anti- HCV seropositivity rate was 34% among thalassemic patients registered in Hawler province.
2. Out of 88 HCV cases included in this study, 2 of them showed to be false positive upon using confirmatory RIBA and Ag-Ab tests. The result of Ag-Ab test done on the 88 thalassemic patients without hepatitis was negative .
3. RNA-PCR was done for 40 hepatitis C thalassemic patients who included in this study and the result showed eight positive cases .
4. The frequencies of IgG aCL, IgM aCL, IgG aPS, IgM aPS, and IgG-IgM β2GP1 antibodies in HCV positive patients with thalassemia were: 39.8%, 10.2%, 15.9%, 5.7%, and 3.4% respectively while in HCV negative patients were: 4.4%, 3.4%, 26.2%, 8% and 1.1% respectively.

5. Gradual increase of IgG aCL antibodies was observed in HCV positive thalassemic patients with increasing of age and the highest mean was reported at age group > 14 and was (63 Unit/ml)

6. Gradual increase in mean serum ferritin was noted with increasing of age in HCV positive thalassemic patients (8148.5 ng/ml) and HCV negative thalassemic patients (7600 ng/ml).

7. Liver enzymes (AP, ALT and AST) showed gradual increase with increasing age in HCV positive patients with thalassemia and in HCV negative patients.

8. Highly significant relation ($P<0.000$) was observed between age, the number of blood unit received and IgG aCL antibodies in HCV positive thalassemic patients.

9. Highly significant (<0.000) correlation founded between age and serum ferritin, ALT, AST in HCV positive and HCV negative thalassemia patients.

10. Highly significant relation ($p<0.005$) was obtained between the number of blood transfusions and IgG aCL and S. Ferritin in HCV positive and HCV negative thalassemic patients .

11. Highly significant correlation ($P<0.000$) observed between number of blood transfusions and ALT and AST in HCV positive and HCV negative thalassemia patients.

Conclusion: Anticardiolipin antibodies are frequently found in thalassaemia patients with chronic HCV infection and they are β2GP1 independent .IgG aPS antibodies are more common among HCV negative thalassemia patients than HCV positive thalassemia patients again they are β2GP1 independent. Hepatocellular injury as reflected by elevated aminotransferase serum activity in thalassemia patients is induced by transfusional iron overload as well as infection by major hepatotropic viruses.

The rate of HCV seropositivity is related to the number of blood units transfu