

Capparis Spinosa as an Alternative Nanoscience Medicine in Treatment of Cancer (A New Aspect of Cancer Treatment)

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Abstract Because of its high number of bioactive constituents in Capparis Spinosa especially polyphenolic compounds. We have studied the extraction and identification of active constituents of bioorganic solvents polar and non-polar we have managed to identify new qualities and quantities of alkaloids from residue of chloroformic extract and separate three groups of alkaloid including tertiary - quaternary strong base alkaloid and classify the obtained individual alkaloids three groups weakly bases alkaloids, alkaloids of medium basicity, strongly bases alkaloid we found promising quantity of alkaloids in Capparis Spinosa and we tried experimental pharmacological and Biological studies of these alkaloids on cancer infected animals we got promising result as we are going to mention in our manuscript. This promising result support that the natural product evidence will continue to be important in the following areas of discovery of new drugs and to find a solution for the problem of cancer and viral incurable diseases.



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1. INTRODUCTION

In (1020) IbnSina (Avicenna) in canon medicine have been used plant Capparis Spinosa for treatment of hypertension, fruits and puds of the plant used in treatment of tumor, inflammation and antimicrobial (1). Over the past two decades much attention has been paid to the pharmacological effects of caper (C.S.) because of its high number of bioactive constituents especially polyphenolic compounds (2) ,(3). Up now there has been much scientific evidence showing that Spinosa possesses different pharmacological effect including

antimicrobial, anticancer and hepato protective (4). According to our knowledge that the natural product will

of methods obtaining individual alkaloids. In fig (4) and fig (5). Shows the result of extraction, isolation, and characterization and assays of active constituents and fractionation and identification of active ingredient of 500g of fruits of C. Spinosa in the method from fig 1 to fig 5.



Fig (1) : Typical picture for Capparis Spinosa plant

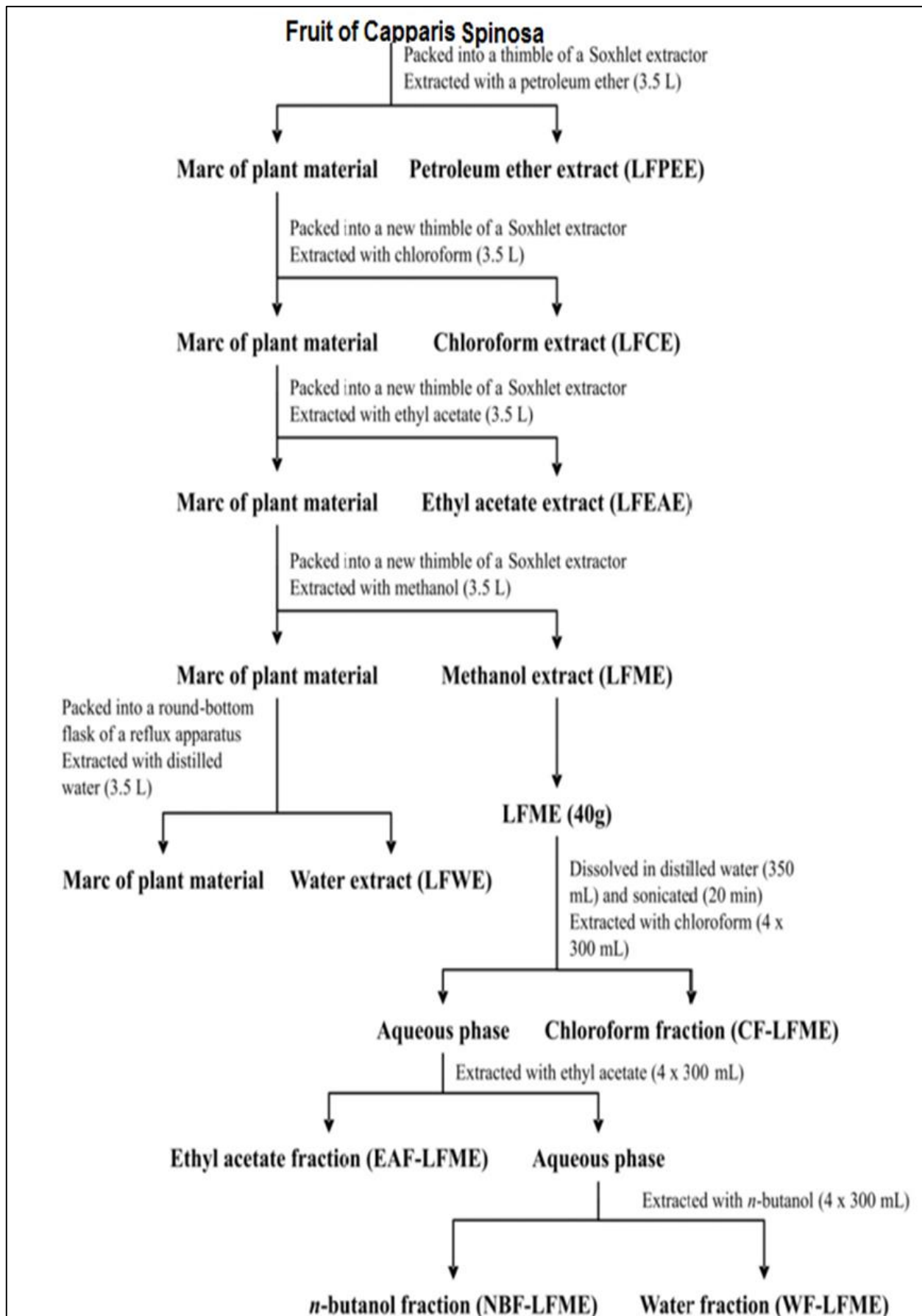


Fig: 2-A

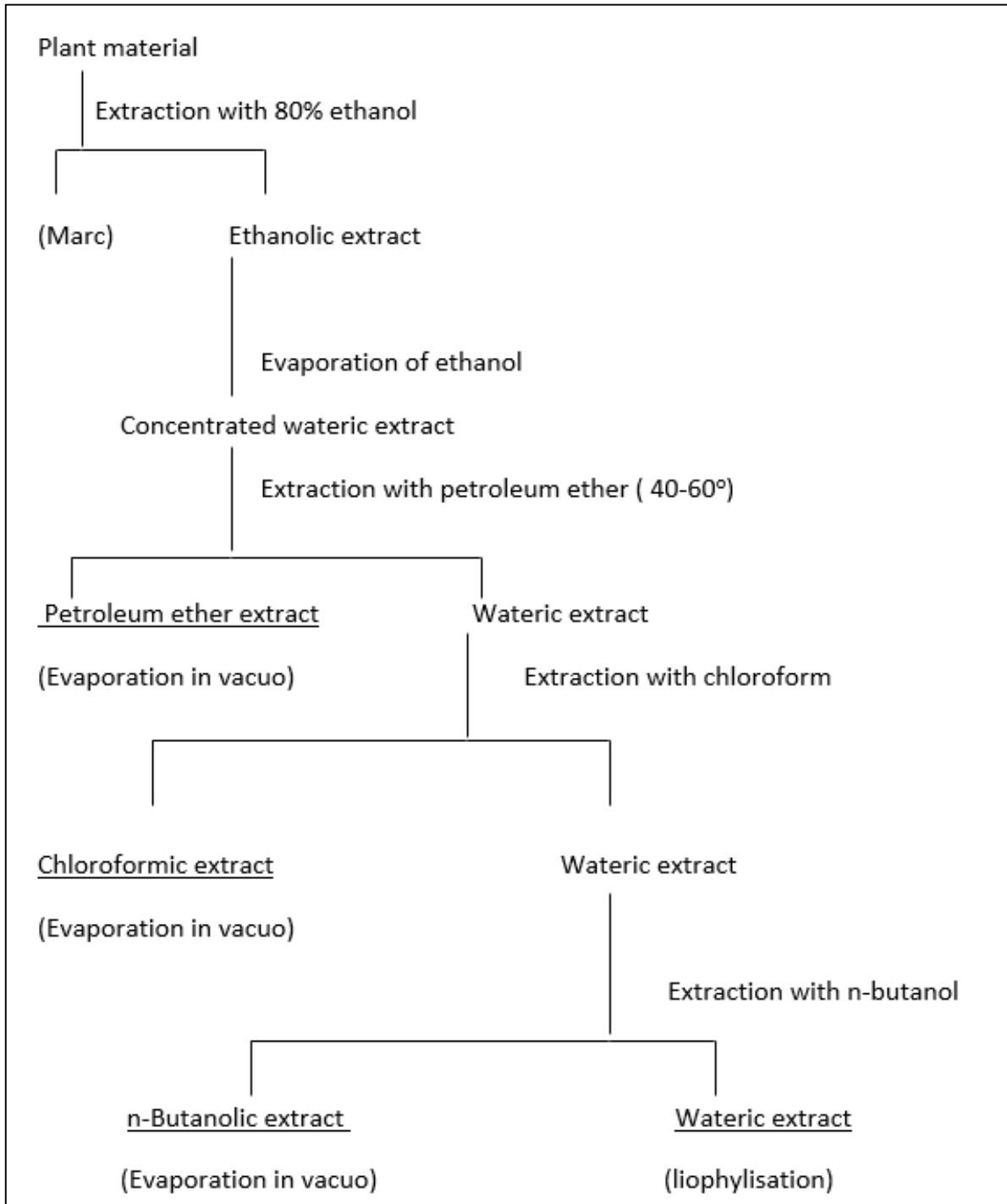


Fig: 2-B

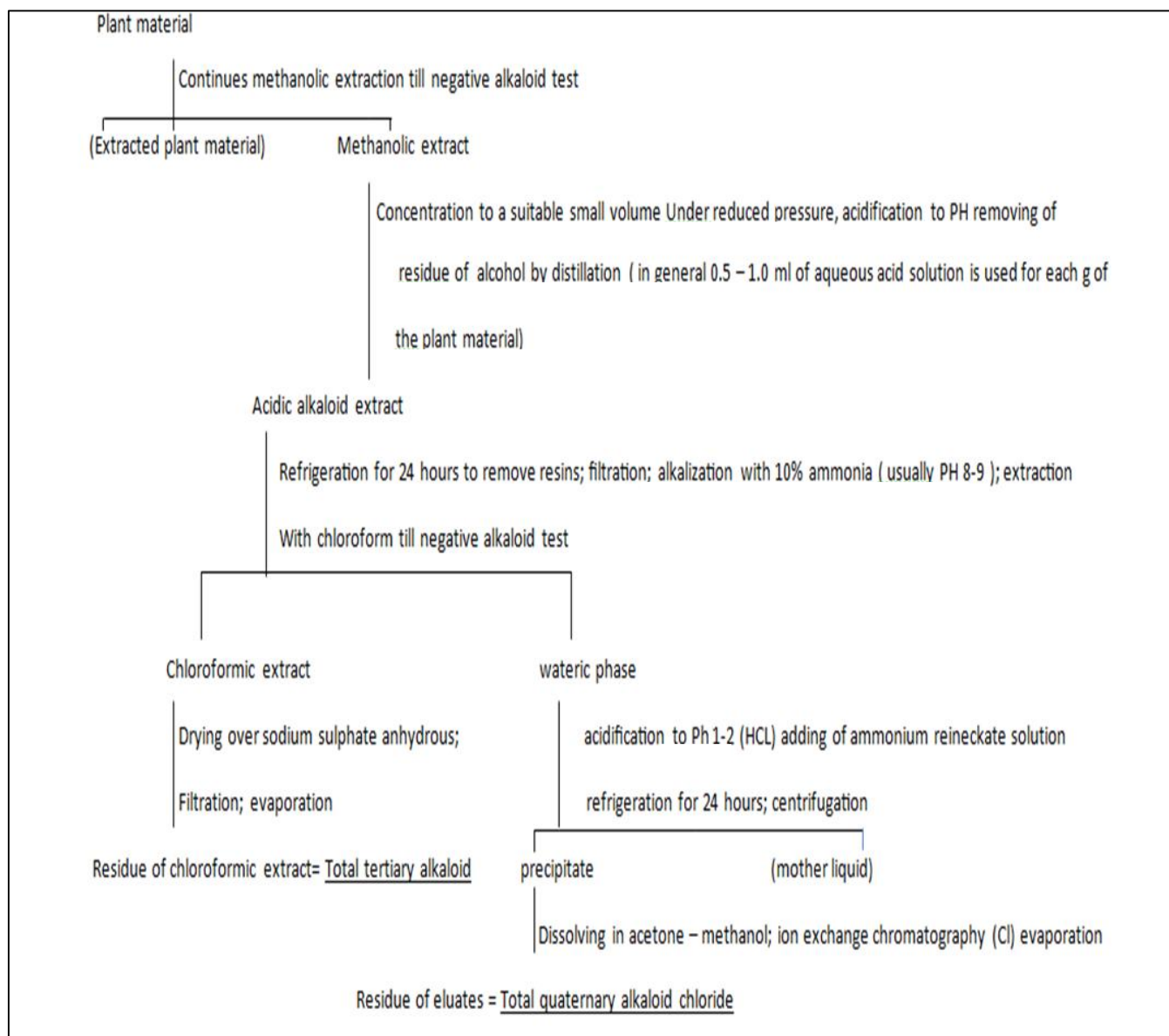


Fig: 3

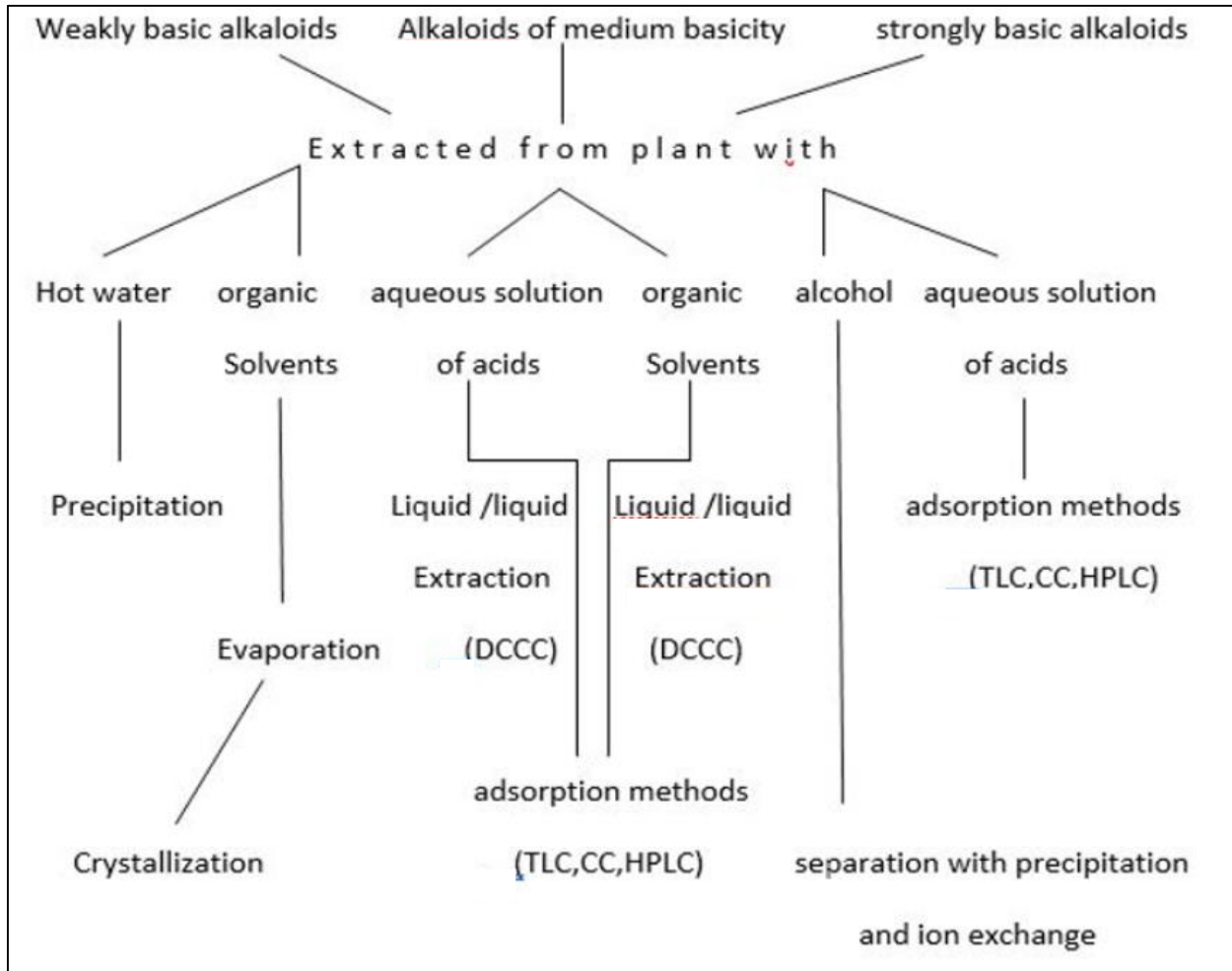


Fig: 4

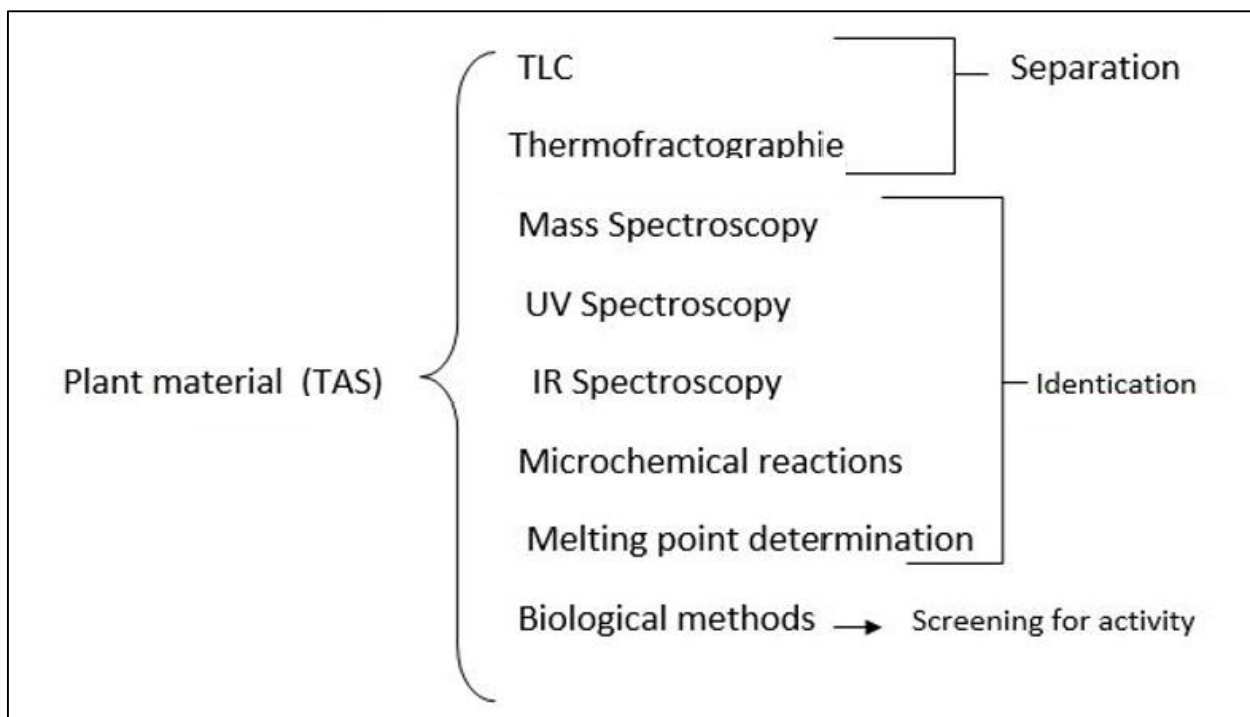
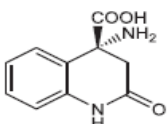
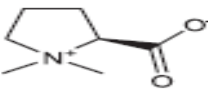
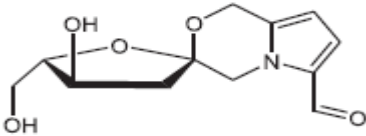
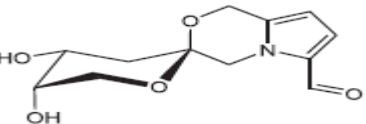
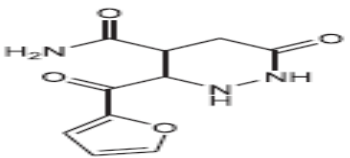
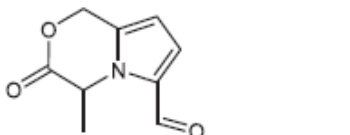
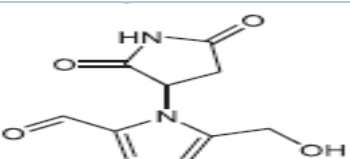
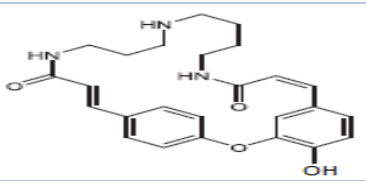
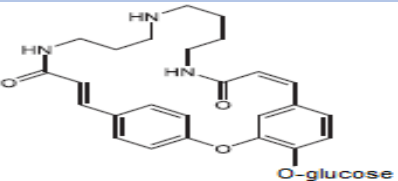
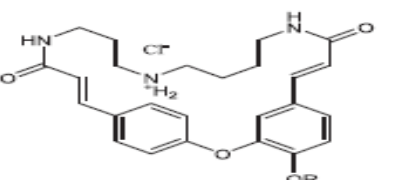


Fig: 4

Table 1 This table shows the group of alkaloids isolated from *Capparis Spinosa* fruit: from IR, UV,N.MR. M.S, and melting point (12).

Name	Structure	M.wt
1- Tetrahydroquinoline acid		177 g/mol
2- Alkaloid		143 g/mol
3- Capparisin A		334 g/mol
4- Capparisin B		496.5 g/mol
5- Capparisin C		495.6 g/mol
6- 2-(hydroxyethyl -2-formyl-pyrrol-1-yl) propionic acid lactone		178 g/mol
7- N-(3'-maleimidy1) -5 hydroxy-methyl -2-pyrroleformaldehyde		223 g/mol
8- Capparispine		435 g/mol
9- Capparispine 26-O-β-D-glucoside		614 g/mol
10- Cadabicine 26-O -β- D-glucoside hydrochloride		435 g/mol

As this table we have seen the most high M.wt more active in treatment of lymph and skin cancer and have analgesic activity specially the 9(Capparispine) and 10 (cadabicine) (table 1). (7). From the separation of medium alkaloid which of medium basicity we found this group are more active in treatment of cancer than strong and weak basic alkaloid these were appeared in our study on lymphoma disease in rats infected by lymph cancer (8). In these experiments these result clear lymph cancer and skin cancer in guinea pig infected by lymph cancer we used six guinea pig for the test and other six animals used as a control treated with normal saline, the ulcer in the cheek pouch, the first group two of them received alkaloid of medium basicity the other two received strong basic alkaloid the other two received weak alkaloid 0.1 mg of alkaloid. on the other hand we used two groups of six animals infected by ulcer in the cheek pouch of these animals, the dose of formalin 0.1 solution of 10% formalin after two days we used six animals group 1 treated by strong basic alkaloid for two weeks 0.1 mg in the epidermis of areas near the ulcer daily and the other group received normal saline 0.1 ml we noticed that the ulcer cured in the test animal while the other control group which received normal saline still the ulcer clear in them which means the polar alkaloid of C.Spinosa have antimicrobial and possibility of antiviral activity.(9),(10),(13) .

2.1. Antioxidant result:

Different group of alkaloid of C.Spinosa were test as follow...

1-Preparation of 1mg/ml ascorbic acid solution.

25 mg of ascorbic acid are dissolved in 25 ml DW. We take 3ml of adrenaline solution and add 3 drops of either ascorbic acid or alkaloid 1ng/ml and wait for 15 minute then observe the color of solution (if the color is yellow this mean the oxidation is occur) as in the following table

Table 2: Shows the antioxidant activity of alkaloid (Capparis Spinosa fruit)

No.	Adrenaline	Ascorbic acid	Total alkaloid	Color
1	3ml	—	—	Yellow
2	3ml	3 drop	—	Clear
3	3ml	—	3 drop	Clear

Each test tube is incubated for 15 minutes at 25co these effect give clear evidence of Immunomodulatory activity.

2. DISCUSSION

In (1020) Ibn Sina (Avicenna) in (Canon medicine) have been used plant Capparis Spinosa for the treatment of hypertension, tumor, (1) inflammation and antimicrobial. Over the past two decades much attention has been paid to the pharmacological effect of caper (C.S) As we know cancer is one of the major causes of death the treatment of cancer is unsatisfying due to certain characters of the disease. The cancer cell like capacity for uncontrolled proliferation, invasiveness and metastasis. More over the cancer cells act on unlike microbes which mean that the drug destroys both the affected cell and normal cell in addition the cancer cell cheating the drug by insensitivity and resting for a period then can start multiplying again. The main effect of vincristine which is one of the important anticancer drugs of plant alkaloid, block mitosis acting on tubulin molecules which fail to polymerize lead dissolution of the mitotic spindle resulting in cell death which infected other traditional anti-cancer medicinal plants Haloxylon plant (8) endogenous medicinal plants in Iraq its extract use of the leaves and buds were used in treatment of cancer (8). In these studies we found that the medium basic alkaloid act as immunomodulators causes activation of unstimulated lymphocyte proliferation (11). The essential oil hydro distilled from leaves and floral buds of C.Spinosa and the water infusion prepared with the same were assayed for anti-carcinogenic potential on HT-29 human colorectal adenocarcinoma cells (10). The essential oil and aqueous infusion of caper induce a G2/M arrest in a dose-dependent manner(10). Till now all the anticancer drugs as we know that the problem of cytotoxicity of the infected cell and the normal cell all the research just now looking for a drug which has specificity to act only the infected cell and inhibit them without other side effect, just now looking for drug of natural origin and using nanotechnology to find such a drug , Fig (6), (8). Any how our results are promising in pharmaceutical and novel drug delivery system. Natural products will continue to be important in three areas of drug discovery (fig 6)

- A- as a target for production by biotechnology.
- B- as a source of new lead compound of novel chemical structure .
- C- as the active ingredients of useful treatment derived from traditional systems of medicine (13)

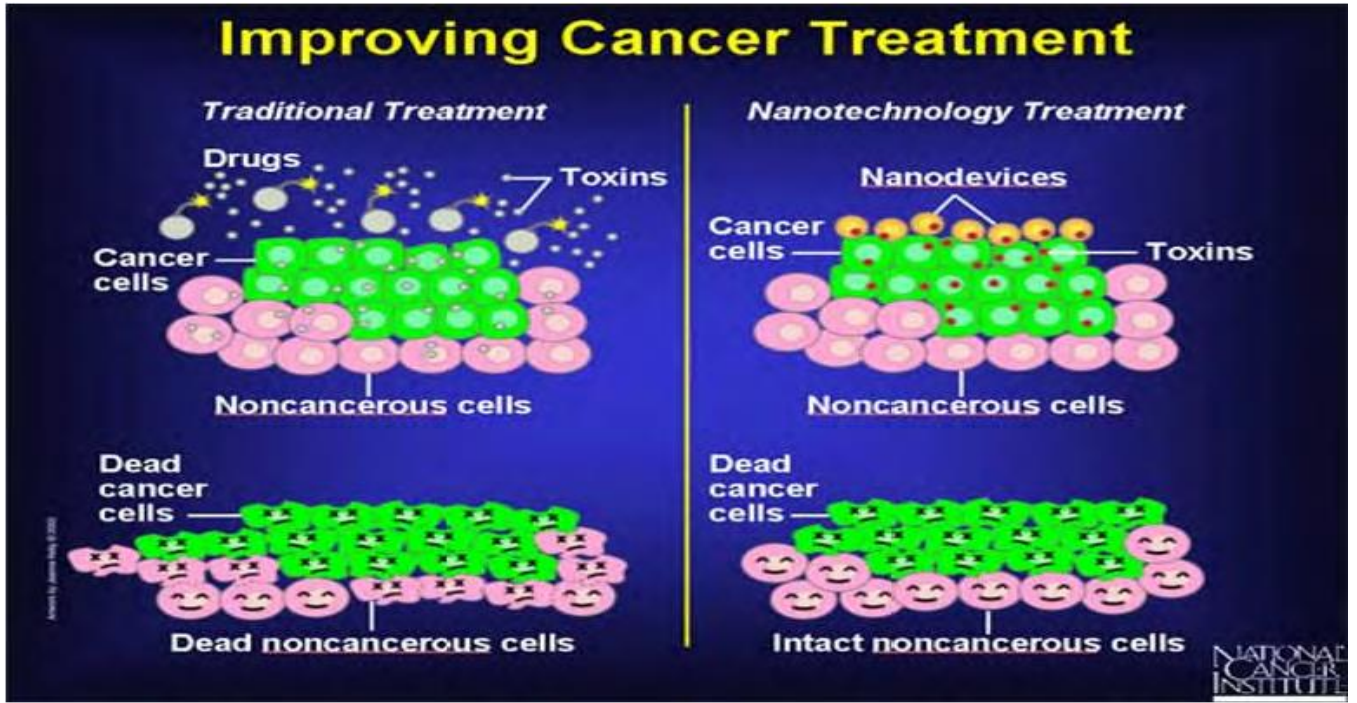
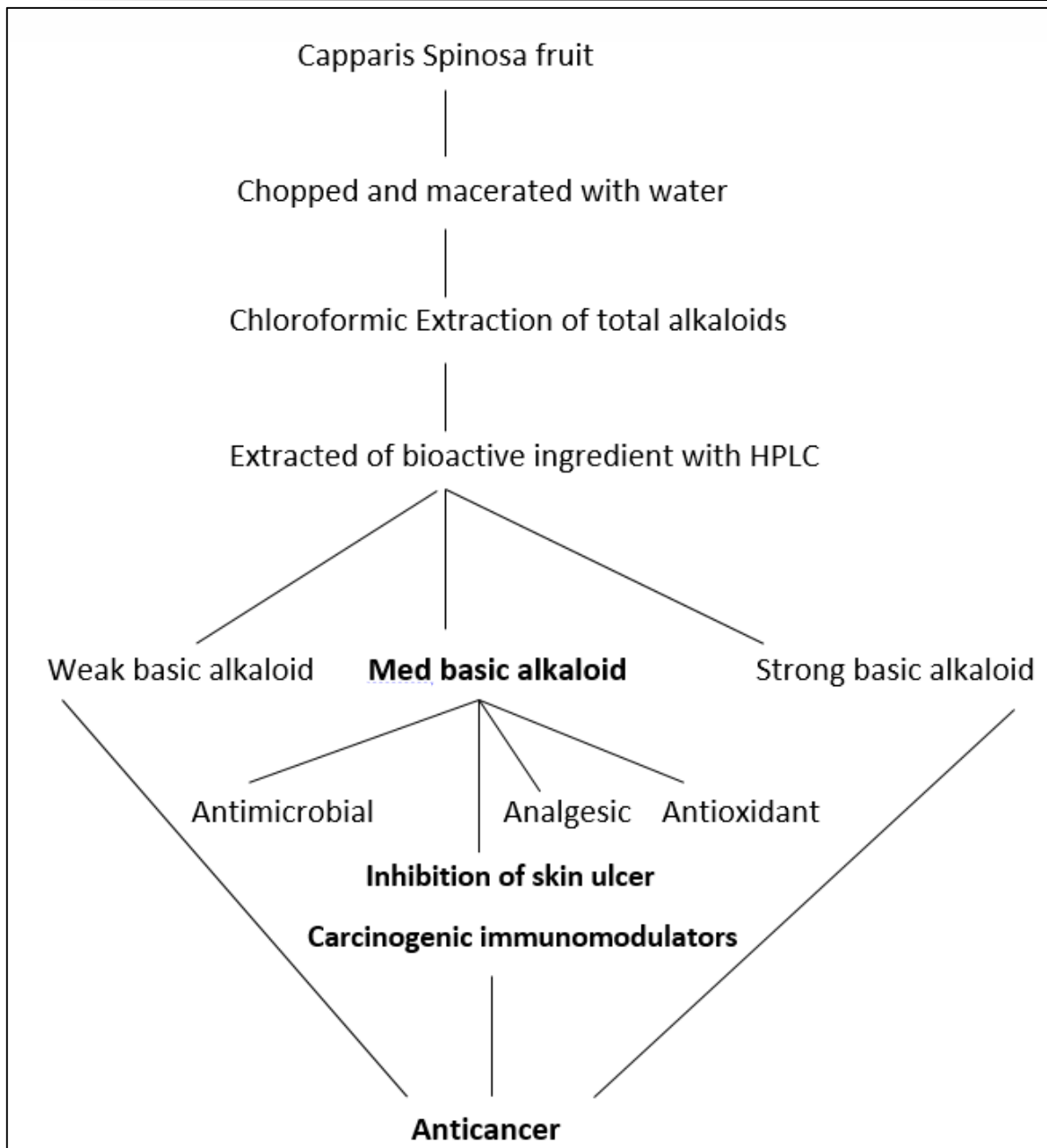


Fig: 6



3. Conclusion

Medium basic alkaloid destroy the growth of infected cell by forming Nano molecule while the strong basic and weak basic alkaloid act as a carrier of active molecule inhibiting the mitosis of sick cell only and not affecting the normal cell .fig(6).

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