

Pharmacologic evaluation of some anti-cancer plants from Paikdooshan and their application

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ABSTRACT

Various kinds of plants were collected all over the Paikdooshan from 1956-2000. They were identified and classified into anticancer plants. According to the result they were composed of 61 families, 129 genera and 162 species. Among them, 10 species of anticancer plants is discussed about their pharmacologic evaluation and application.

Key words : anticancer plants, pharmacologic evaluation, Paikdo Mt, clinical use, traditional Chinese medicine.

INTRODUCTION

Cancer are a kind of most harmful diseases to the health of mankind at the present age. So, the prevention and treatment against cancers are a most important task in medical field. Although oncological surgery, radiotherapy, chemotherapy and other therapeutic methods were developed rapidly and have had got enormous progress, but up to date, still existing many difficult problems can not be solved.

The use of the Chinese medicines in China have had a long history for thousands years, and had cumulated lot of experiences in treatment of many kinds of knotty diseases, among them, many kinds of traditional Chinese herbal medicines had been used or studied in cancer diseases, so, a large amount of experiences and scientific data have been obtained in many years. Many kinds of useful natural drugs, such as plants, animals and mineral drugs have been discovered, studied and used in cancer treatment in a long period of time. The cumulated data of enormous Chinese medicines were so much and helpful for cancer therapy and research especially the characteristics of Chinese drugs about their effective and safety were noted in the world. therefore we collected all

over the Tsangbaishan ,many kinds of the anticancer herbal medicines to publish in this paper.

MATERIALS AND METHOD

Various kinds of plants were collected all over the Changbaishan from-1956-2000 They were identified and classified into anti-cancer plants . In line the scientific and technological literature, pharmacological evaluation and clinical application is discussed .

RESULTS

1. *Juglans mandshurica* Maxim. Family *juglandaceae*

The seed and branches are used in traditional medicine to treat cancer . Containing polysaccharides, naphthol quinone, benzoic acid, hydrojuglone, tannin and gallate, etc.

In vitro, the cell killing rates of naphthol quinone against S-180 and EAC cancer cells were 60,5%-100%. In vitro, the alcoholic extract of the seeds of the herb administered (50%/kg for 7 days ip.), the inhibiting rates against ESC and S-180 were 45%-71%($P < 0,01$)and 37%-55,8%($P < 0.05$)respectively.

It can be used for treatment of esophageal , gastric, cardiac, and lung cancer.

The alcoholic extract of unmaturing fruit used orally once 10-20ml for one year on advanced esophageal , cardiac cancers and in some patients after surgery , the effective rate was 53% , for the earlier stage cancer patients , the effective rate was 76% , and no adverse reactions were found.(Gao Quibin : Zongyiyaoxinxi 1988(3):31).

2. *Aconitum kusnezoffii* Reichb . Family *Ranunculaceae* .

The root are used in traditional medicine to treat cancer . Containing acotine , hypacotine , mesacotine and chuan-wu-base B etc .

Acotine 0.4mg/kg ip., its inhibiting rate on HepS was 47.7%-57.3%($P < 0.01$), it was effective on S-180 sarcoma and was more effective with larger dose . its crude extract 0.2mg/ml inhibited growth of gastric cancer cells, it was also effective on human lung, liver and gastric cell lines. Aconitine inhibited metastasis of LLC carcinoma.

For liver cancer : 30cases of primary liver cancer patients treated mainly with aconitine , among them, 20 cases used aconitine singly, 14cases were effective, 10 cases combined with 5-Fu, 6 cases were effective, in 30cases, the total effective rate was 66.6%.

3. *Astragalus membranaceus* (Fisch.) Bge. . Family *Leguminosae*..

The root used in traditional medicine to treat cancer . Containing Kaempferol,isorhamnetin, fhamnocitin, formononetin, calycosin, astragaloside I, II, III,, sayasaponin, astragalan I, II, III etc.

The hot water extract of Radix Astragali has an inhibitory action against S-180, with a rate by 41.7% . astragalan could significantly enhance the carbon clearance . In addition Radix Astragali and its active principles could induce interferon(IF)and enhanced NK cellular activity of human peripheral blood . as well as the principle F could increase the activity of LAK cells induced by IL-2.

Composite prescription for gastric carcinoma .

4. *Clematis hexapetala* Pall Family *Ranunculaceae* .

The root are used in traditional medicine to treat cancer . Containing clematosideB, anemonol, saponin, amino acids, phenols etc.

Studies in vitro showed that the water extract of the herb with a concentration of 500µg/ml has an inhibitory action against JTC-26 cell line, the inhibitory rate was 50% to 70% .

Composite prescription for esophageal carcinoma .

Radix Clematidis 60g , *Radix Isatidis* 30g , *Herba Euphorbiae Lunulatae* 30g , *Calculus Bovis Artificialis* 9g , *Sal Ammoniac* 3g , *Rhizoma Arisaematis Preparata* 9g

The above herbs were made into drying extract powder for oral administration. 4 times a day , 1.5grams each time . The prescription was used for treatment of 300 cases of advanced carcinoma . The results showed that the complete remission was 33 cases , remarkable efficacy in 53 cases , efficacy in 180 cases , inefficacy in 34 cases , with a total effective rate of 88.7% and the longest survival period was over 5 years

5. *Solanum nigrum* Linneus . Family *Solanaceae* .

The whole plant are used in traditional medicine to treat cancer . Containing solanine , solasoline , solamargin , saponin (diosgenin , tigogeninin) , etc .

The total alkaloids of the herb has very strong anticancer actions against murine tumors , the extract of the herb's , leaf has inhibiting effect against S-180 , U-14 and Ec tumor models .

It could be used for treatment of liver , lung , cyst cancers and

choriocarcinoma or choriadenoma and leukemias .

The composite prescription of the herb :

Herba Solani Nigri 15g, *Semen Coicis* 15g, *Radix Trichosanthis* 15g
Radix Arnebiae 15g , *Herba Solani lyrati* 15g , *Radix Saviae miltiorrhizae*
15g , *Radix Sophorae tonkinensis* 30g , *Herba Scutellariae barbatae* 30g

The above herbs were mixed and boiled with water , one dose was administered orally twice daily .

34 cases of choriocarcinoma and 43 cases of choriadenoma were treated with the composite prescription and chemotherapy , in total 77 cases , the CRrate was 83.1 % .

6. *Agrimonia pilosa* Ledeb . Family *Losacea* .

The part over ground are used in traditional medicine to treat cancer , Containing Agrimonine , agrimophol , vanilic acid , luteolin-7-B-D-glucoside , etc . Tests in vitro , Agrimonic was effective against JTC-26 , The inhibitory rate was over 90% .

The water extract of Agrimoniac has obvious killing action on HL-60 . The alcohol extract of Agrimoniac was effective against S-180 murine tumor , the inhibitory rate was 53 . 2%-57 . 2% .

The compound prescription of *Herbo Agrimoniae* , *Venenum* , *Bufois* , and *Radix Ginseng* , was used for treatment of lung cancer in 62 cases , 6 cases were remarkable efficacy , 33 cases were effectual , the total effective rate was 62 , 9% , the survival rate in 1 year was 16% .

7. *Arisaema amurense* Maxim . Family *Araceae* .

The tuber are used in traditional medicine to treat cancer . Containing saponin , mannitol , benzoic acid , mucoitin , etc .

The fresh water extract solution of the herb . at 1 : 8-1 : 3 concentration , it has inhibiting action against hela cell line . The water extract solution 0 . 1ml (1 g fresh herb/one mouse) with im . it was effective against S-180 , HCA AND U-14 murine tumors . The D-mannitol extracted from the fresh herb has similar anticancer action as above experiments .

The composite prescription : *Rhizoma Arisaematis* 15g , *Rhizoma Pinelliae* 15g , *Pheretima* 15g , *Polyporus* 15g , *Semen Cassia* 15g, *Bombyx Batryticatus* 9g , *Flos Chrysanthemi* 9g , *Semen Celosias* 9g , *Eupolyphaga seu Steleophaga* 9g , *Scolopendra 2 Tiao* , *Gekko swinhoana 2 Tiao* .

The prescription was boiled with water , administred orally . 67 cases of

primary central nervous system tumors have been treated , in which the tumors of 41 cases have been part resected . In 24 cases without surgery treatment , the total effective rate was 77 . 61 % . in which 10 patients returned to work , 16 cases recovered to work , normal life , 19 cases could be taken care of himself , 20 cases of neuroglioma have been followed up , their long term survival rate for 1 year was 90% , two years 85% , 5 years 80% , 10 years 30% .

8. *Ranunculus japonicus* Thunb . Family *Ranunculaceae* .

The whole plant bearing root , are used in traditional medicine to treat cancer . Containing protoanemonin , volatile oil , etc . The plant has inhibiting action on cancer cell line .

To take the injection of the herb 4 ml , by intramuscular injection (IM) , once or twice daily . The prescription was used to treat 33 cases of squamous cell carcinoma of lung , undifferentiated carcinoma and melanoma etc . The results showed that 4 cases were CR , 3 cases were PR . 6 cases were effective . The total effective rate was 39. 4 % . The protoanemonin was used 17 cases of pulmonary carcinoma , 5 cases were remarkably effective , 2 cases were effectual .

9. *Chelidonium majus* Linnaeus. Family *Papaveraceae* .

The whole plant bearing root , are used in traditional medicine to treat cancer . Containing chelidonic acid , chelidonine , protopine , etc .

Chelidonic acid is effective against Fca-109 and S-180 murine tumors . The higher cocentracton was used at 1 , 5 , 10 , 20 , 30mg /ml , the killing action was stronger for Fca-109 . It has obvious killing action on maligant tumor cells . For digestive and respiratory tract of maligant tumor .

Ukrain was used to treat 300 tumor patients , about 30 % of them , tumors were disappeared and stopped metastasis , at last , those tumor cells died in lack of oxygen .

10. *Menispermum dauricum* DC. Family *Menispermaceae* .

The rhisome are used in traditional medicine to treat cancer . Containing menisperine , tetrandrine , sinomenine , dauricine and daurinine , etc .

It water extract was effective against YAS , HepA and U-14 murine tumors , the 60% tumor bearing mice have survived for long period of time . In the serum of the anticancer antibodies were found . In vitro , it was effective

against acute lymphocytic and granulocytic leukemias cell lines .

It could be used for treatment of lung , cyst , chorioadenoma and leukemia cancers . Its dauricine injection , tablets and honey pills preparations have been used for : (1) Treatment of cyst cancer : its extrct tablets (1,5g crude drug/one tab) 4tabs /once , t, i, d or its injection solution 4 ml (one ml containing crude drug 2g) im. b. I. d treated combining with camptothecine (10-15mg , addingN. S. 20-30ml, 3 times/week) , the results showed that in 53 cases , 2 cases were CR , 33 cases were PR , 11 cases were MR , 7 cases were NC, the total effective rate was 86. 6%. (2) Treatment of chorioadenoma : its total aikaloids and alkaloid A were used in 104 cases , the total effective rate was 88, 26% , 20 cases treated with alkaloid B , 15 cases were CR , 3 cases were MR , 2 cases were NC , the effective rate was 90% .

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