Herbs as hemostatic and coagulant

Science

Herbs as hemostatic and coagulantRubia cordifoliaMajheeta is extracted from stem and root of Rubia cordifolia Linn. The herb produces hemostatic effect by removing pathogenic heat from systemic circulation, channel deobstruent and stasis eliminitave action. This is distinctly used in the treatment of epistaxis, hematemasis, metorrhagia, amenorrhea and also for wpund and injuries. Its strain contains anthraquinones i. e mujistin, purpuroxanthin, alizarin, pseudopurpurin and purpurin.

Pharmacology

HEMOSTATIC ACTION

Experiment conduct on rabbit with several femoral arteries, local application of Rubia cordifolia Linn powder stopped bleeding, and the powder applied on gauze and press for 35 seconds. In mice with tail wound the oral administration of 0. 1g/20g of charred herb from Rubia cordifolia was more advantageous in shortning the bleeding time in same strength as compare to crude hergb. On rabbits, coagulation time also shortened by infusion. On human, decoction administered by mouth provide in some shortning of coagulation and bleeding time, which predict the presence of weak hemostatic effect. Invitro studies show that the in decoction, the alizarin which combined with blood produces the weak anticoagulant effect.

CLINICAL STUDIESHEMORRHAGIC DISEASE

The Rubia cordifolia extract powder was administered to 41 patients with bleeding after extraction of tooth. The bleeding terminates after one – two minutes. In patient with bleeding of nasal due to abrasion of the midc turbinate the local application of Rubia cordifolia powder produce good hemostaticeffect. The patients with bleeding due to eschar sloughing follow

electrocauterization of uterine cervix, in few patients with bleeding of residual teeth roots due to hepatic insuuficiency and other patients with traumatic injuries. Decoction of 90 mg of herb derives from Rubia cordifolia, combine with brown sugar and yellow wine, 2 days after daily treatment the hemostatic effect was achieved in 10 cases of menorrhagia. ToxicityThere was no mortality reported mice given the decoction of Rubia cordifolia of 150g/kg. When the dose was increased to 175 g/kg 1 of 5 test animals died. Rheum palmatum[image:][image:]Raivand chini is derived from rhizome and root of Rheum palmatum L (polygonacele) it has cold property & bitter taste. It posses detoxicant, anti-inflammatory, stasis-deobstruent, laxative and purgative properties. It is indicated in abdominal pain due to indigestion, jaundice due to pathogenic heat, constipation due to asthenic heat, amenorrhea due to blood stasis, furuncles, and scalds, in carbuncles, burns and scalds. 3-5% anthraquinone derivatives are the major biologically active constituent. Rhein, chrysophanol, emodin, physcion and aloe emodin exist in free form. The anthraquinone glycoside includes physcion monoglucoside, rhein-8-mono-D-glucoside, chrysophanol monoglucosideand monoglucoside. The constituent of Bis-anthraquinone include sennosides A, B, C, D, E nad F. the constituent of anthraquinone conjugates of resin, cinnamic acid and gallic acid was 10. 4%. The tannins include are anthraquinone tannin, catechu tannin and cinnamyl gallotannin Pharmacology

ASTRINGENT AND HEMOSTATIC ACTION

Rheum palmatum reduces the exudation in wounds by precipitated the protein. The anti-inflammatory and astringet effect of the herb may because of its components: tannins, anthraquinone derivatives, free gallic acid and calcium. In case of internal and external bleeding Rheum palmatum produce hemostatic effects. It improves the capillary fragility, decrease capillary permeability & shortened the coagulation time. The herb induces proliferation of blood capillaries; promote formation of platelet by bone marrow, thus providing the facilitory effect on blood coagulation. Along with calcium and tannins, Chrysophanol is also another important hemostatic constituent.

ASTRINGENT AND ANTIDIARRHEAL ACTION

Rheum palmatum cantain high amount of tannins and posses an astringent effect. In minimum doses (0. 05-0. 3g) it can cause constipation and not cause diarrhea as the tannins overcome cathartic components which are in low amount. The tannins, specifically D-catechin block indole production and the amine forming enzyme of intestinal flora was inhibited in order to induce constipation. PharmacokineticsAbsorption: after oral administration the herb was readily absorb. Serum drug concentration Peak after 2 hours. After 8 hrs only trace amount was detected. Emodin was partially soluble in slightly alkaline solution, so the Rhein was more adsorbable than emodin. DistributionThe adsorb anthraquinone were detected in liver, gallbladder and kidneys. In 2 hrs the maximum level was detected. In rabbits Within 5 minutes of IV administration the peak rhein level was achieved. The level of drug dropped rapidly and after 1 hr only a trace could be found in blood. ExcretionThe anthraquinone excreted in urine were 23. 4% and in feces 22. 8% of the original dose. In urine excretion of anthraquinone occurred within 2-4 hrs, in 8 hrs 61% of the original dose was excrete out. In alkaline urine the excretion of anthraquinone gave red orange colour urine, and a yellow

orange colour in acidic urine. the excreted substance was the salt of glucuronide of the anthraquinone. In bile of mouse oral emodin remarkably increase the amount of anthraquinone. The peak level was detected in 4 hrs followed by rapid decline. This evidence indicates that the major route of excretion of anthraquinine is the biliary tract. The free anthraquinone which wetre fat soluble reacted with bile salt present in bile and undergo enterohepatic circulation, before complete excretion remaining in body as long as 3 days. In mice & huiman chrysophanol was oxidize into aloeemodin and rhein. The conjugation with glucoronic acid detoxified all the anthraquinolone, the urinary anthraquinon present in conjugated form. ToxicityThe IV administration of anthraquinones or Rheum palmatum extract for 3-9 months cause degeneratiom of hepatocytes, adlnomatous change of thyroid gland, epithelial hypertrophy or or hyperplasia of proventriculus and venostasis. The cathartic strength of IP dose in mice paralleled its toxicity. By intragastric administration the LD50 of anthraquinone were: physcion 1150mg/kg, emodin 560mg/kg, chrysophanol 10g/kg.

HEMORRHAGE AND THROMBOCYTOPENIA

In extaernal and internal bleeding the herb had an outstanding effect in profuse hemoptysis or chronic mild hemoptysis 1 or 2 doses of rheum pill were effective. To teraet menorrhagia, epistaxis, thrombocytopenia, bleeding following therapeutic abortion and functional uterine bleeding. Adverse effects: The crude drug has low toxic effects, but intoxication could result due to overdosage, specially of the fresh herb. The symptoms of toxicity include: nausea, vomiting, abdominal colic, dizziness and jaundice. Cirrhosis of liver and electrolyte imbalance (hypokal; emia) may occur due to prolong

use of anthraquinone cathartics. Rosa cymosa The root bark of Rosa cymosa is bitter and puckery in taste. It contains astringent and heamostatic action. To stop bleeding, the powder root bark is used in folk medicines. It contains tannins in high amount; the tannin content is about 38. 2% without the thick fibre. The organic acids, pigments and saponins are also present.

HEMOSTATIC ACTION

The topical application of powder or extract of herb to dogs with hemisectioned femoral artery and to incision of the liver, spleen or kidney of dog produce a good hemostatic effect. From gelatin sponge powder a more noticeable local hemostasis can be obtained from. The Sponge powder extracted from N-dimethyl formamide. This powder can be absorbed in tissue without causing tissue reaction. Invitro studies revelead that DMF at final concentration below 0. 82% decrease the clotting time of rabbit blood from 25-31 min to 10 min. The blood sample taken from external jugglar vein of rabbit after IV administration of DMF of 14. 2mg/kg shows the mean clotting time of 6. 6±2. 1 min which was 88% shorter than 55. 4±7. 2 min of control group using buffer solution. The bleeding volume was decrease from control value of 2. 33ml to 0. 63 or 0. 58 ml after IV administration at the dose of 0. 71 or 1. 4mg/ 100gm to rats. The bleeding time was shorter from 12. 2 min of the control to 3. 0 or 2. 1 min. When DMF was analyzed in duck and rabbit blood, the differences were very significant. It can produce clotting effect in rabbit blood but not in duck blood. Infact it prolongs the coagulation time of duck blood as the duck blood is lack of factor xii. It is evaluated that the effect of extract of herb is mediated by activation of factor xii. Toxicity: Intragastric administration of aqueus extract at dose of 10

g/kg to albino mice did not cause toxicity. But serious irritation was produced by intraperitoneal injection. The mice were killed at the dose of 1g/kg. Spraying of the herb powder into the intraperitoneal cavity of dog at dose of 6. 7g was also fatal to animals. Increased ascities and marked congestion of imntraperitoneal cavity shopwed by autopsy finding. The IV administration of herb extracts at dose of 0. 71 or 1. 42mg/kg produce no known toxic effect.

BLEEDING FROM TRAUMATIC WOUND

In all fifty six cases local application of herb powder and applied pressure for one to three minutes produce homeostasis. The prevalence of local infection also reduce by the drug. Internal or deep tissue bleeding due to operation or external trauma In fifty two patients after general operation or thoracic orthopedic, the gelatin sponge powder of herb was tried. In 90% cases the adequate hemostatic effect was obtained and there were no adverse effects.