

## 75. RHIZOMATA ET RADICES RHODIOLAE ROSEAE RHIZOMES and ROOTS of a RHODDIOLA ROSEA

Harvested in a blooming and fructifications phase, cleared and washed from ground, cut and dried rhizomes and roots of perennial growing wild herbaceous plant of a rhodiola pink — *Rhodiola rosea* L., family of tolstiankovykh — Crassuiaceae.

**Choronomic attributes.** *Integral raw material.* Pieces of rhizomes and roots of the various forms. Pieces of rhizomes of length up to 9 cm, thickness of 3 — 5 cm, hard, rugosity, with traces of died off stems and oddments of scale-shaped leaves. From a rhizome the not numerous roots of length 2 — 9 cm with thickness of 0,5 cm — 1 cm. Surface of a rhizome and root is glossy, grayish - brown color; at a spalling of a cork the golden - yellow layer is found out. Color on a break pinkish - brown or light brown. An odor specific, reminding odor of a rose. The taste is bitterish - matching.

*The crushed raw material.* Slices of rhizomes and roots of the various forms permeating the screen with holes of 7-mm diameter. Color is pinkish - brown or light brown. An odor specific, reminding odor of a rose. The taste is bitterish - matching.

**Microscopy.** On a transversal section of a rhizome the stratose periderm is visible. The rhizome has fascicular phylum of a constitution. The conducting bundles open, collateral, spindled, are posed by the ring and are oriented to periphery of a rhizome by a phloem to the center — by a xylem. Possible a presence of the second ring of more shallow conducting bundles, in which the phloem is oriented to the center, and xylem — to periphery. The parenchyma of a rhizome consists of large cells filled with Amylum. Amylaceous grains simple, spherical or oval, 5 — 20 microns in a diameter.

**Qualitative tests.** In a flask of 20 ml capacity place 1 g of the crushed raw material (see clause «Quantitative tests»), add 10 ml of methanol and heat up on the water bath at temperature 65 °C during 20 min with a reflux condenser. Extract filtrate through the paper filter. On a line of start of a chromatographic plate «Silufol UV-254 » by a micropipet is applied 0.002 ml of obtained filtrate. A plate with applied sample place in the chamber, which previously saturated for not less than 24 h with an mixture of solvents: Chloroformium — methanol — water (26:14:3), and develop the plate by an ascending method.

When the front of solvents will pass about 13 cm, a plate take out from the chamber, dry on air during 5 min and look through in UV light at a wavelength 254 nm. On the chromatogram the predominant spot of violet color with *R<sub>f</sub>* around 0,4 (rozavin) should be found out, the presence of other spots is accepted.

The chromatogram is sprayed with 10 % by solution of a sodium carbonate, place in a drying chamber and maintain at temperature 110 °C during 2 min, then spray with diazotized sulfacetamide and heat up at temperature 110 °C during 2 min. On the chromatogram the spot of reddish color with *R<sub>f</sub>* about 0,42 (salidrozs) should be shown; the presence of other spots is accepted.

**Note.** Preparation of plates: a plate " Silufol UV-254" 15x15 a cm will cut crosswise of lines of a knurl on 3 parts of dimension 15x5 a cm and before application of samples dry up in a drying chamber at 110 °C during 1 h

**Numerical parameters.** *Integral raw material.* A salidrozs not less than 0,8 %, humidity not more than 13 %, general ash not more than 9 %; other parts of a plant (leaves, caulises, including unbound at analysis) - not more than 4 %; an organic admixing not more than 1 %; a mineral admixing not more than 3 %.

*The crushed raw material:* a salidrozs not less than 0.8 %; humidity not more than 12 %; general ash not more than -8 %; particles not permeating the screen with holes of a diameter of 7 mm, more than 10 %; particles permeating the screen with holes in diameter

0.5 mm, not more than 2 %; an organic admixing not more than 1 %; a mineral admixing not more than 3 %.

**Quantitative test.** Analytical sample of raw material will cut into fragments up to dimension of particles permeating the screen with holes by a diameter 2 mm. About 0.5 g (exact shot) of crushed raw material place in a flask of 100-ml volume, add 10 ml of water and heat up on the boiling water bath with a reflux condenser during 15 min.

Then the extraction is filtrated through the paper filter in a volumetric flask of 50-ml capacity, avoiding ingress of particles of raw material on the filter. The extraction is repeated with 10 ml of water, heating up each time during 10 mines and filtrating in the same volumetric flask.

To a refrigerated filtrate add 6 ml 10 % solution of the lead Acetate, 2 ml of a saturated solution of a sodium sulfate, carefully stir, bring up volume of solution by water to a label and filtrate through the paper filter. The first 1-ml of a filtrate reject.

In to the volumetric flask of 25 ml capacity place 5 ml of obtained filtrate, add 2.5 ml of 2 % solution of a sodium carbonate, 2.5 ml diazotized sulfoneal, bring up volume of solution by water to a label, stir and after 5 min measure absorbency on the spectrophotometer at a wavelength 486 nm in the cell with the optical way 10 mm, utilizing water as solution of comparison.

The contents of a salidrozyd in recalculation on absolutely dry raw material in percentage (X) calculate according to the formula:

$$X = \frac{D * 250 * 10}{253 * m * (100 - W)}$$

Where D - absorbency of analyzed solution, 253 — a specific parameter of absorption (SI) of salidrozyd; m — mass of raw material in grams; W — loss in weight at drying of raw material in percentage.

**Notes.** 1 Preparation of a diazotized sulfacetamide: 7 g of a sodium sulfacetamides - dissolve in 50 ml of water in a volumetric flask of 100 ml capacity, add 9 ml of concentrated Acidum hydrochloric and bring up volume of solution with water to a label; 1 ml of obtained solution is placed in a volumetric flask with 100 ml capacity, put on ice, add 50 ml of water, 0.2 ml 10 % of solution of a sodium nitrite, stir and bring up volume of solution with water to a label. Solution use freshly made.

2. Preparation of a saturated solution of a sodium sulfate: 60 g of a sodium sulfate fill up with 100 ml of water and leave at frequent agitation at 24 h

**Packaging.** Whole raw material pack into bales from a tissue not more than 50 kg net or in pouches from fabric not more than 30 kg net; cut and dried - in pouches from canvas not more than 30 kg net.

**Shelve life** 3 years.

**Tonic.**

## 75. RHIZOMATA ET RADICES RHODIOLAE ROSEAE КОРНЕВИЩА И КОРНИ РОДИОЛЫ РОЗОВОЙ

Собранные в фазу цветения и плодоношения, очищенные и отмытые от земли, разрезанные на куски и высушенные корневища и корни многолетнего дикорастущего травянистого растения родиолы розовой—*Rhodiola rosea* L., сем. толстянковых—Crassulaceae.

**Внешние признаки. Цельное сырье.** Куски корневищ и корней различной формы. Куски корневищ длиной до 9 см, толщиной 3—5 см, твердые, морщинистые, со следами отмерших стеблей и остатками чешуевидных листьев. От корневища отходят немногочисленные корни длиной 2—9 см толщиной 0,5 см — 1 см. Поверхность корневища и корня блестящая, серовато-коричневого цвета; при отслаивании пробки обнаруживается золотисто-желтый слой. Цвет на изломе розовато-коричневый или светло-коричневый. Запах специфический, напоминающий запах розы. Вкус горьковато-вяжущий.

**Измельченное сырье.** Кусочки корневищ и корней различной формы, проходящие сквозь сито с отверстиями диаметром 7 мм. Цвет розовато-коричневый. Запах специфический, напоминающий запах розы. Вкус горьковато-вяжущий.

**Микроскопия.** На поперечном срезе корневища видна слоистая перидерма. Корневище имеет пучковый тип строения. Проводящие пучки открытые, коллатеральные, веретеновидные, расположены кольцом, ориентированы к периферии корневища флоэмой к центру — ксилемой. Возможно наличие второго кольца более мелких проводящих пучков, в которых флоэма ориентирована к центру, а ксилема — к периферии. Паренхима корневища состоит из крупных клеток, заполненных крахмалом. Крахмальные зерна простые, округлые или овальные, 5—20 мкм в диаметре.

**Качественные реакции.** В колбу вместимостью 20 мл помещают 1 г измельченного сырья (см. раздел «Количественное определение»), прибавляют 10 мл метилового спирта и нагревают на водяной бане при температуре 65 °С в течение 20 мин с обратным холодильником. Извлечение фильтруют через бумажный фильтр. На линию старта пластинки «Силуфол Уф-254» микропипеткой наносят 0,002 мл полученного фильтрата. Пластинку с найденной пробой помещают в камеру, которую предварительно насыщают не менее 24 ч смесью растворителей: хлороформ — метиловый спирт — вода (26:14:3), и хроматографируют восходящим способом.

Когда фронт растворителей пройдет около 13 см, пластинку вынимают из камеры, сушат на воздухе в течение 5 мин и просматривают в Уф свете при длине волны 254 нм. На хроматограмме должно обнаруживаться доминирующее пятно фиолетового цвета с  $R_f$  около 0,4 (розавин), допускается наличие других пятен.

Хроматограмму опрыскивают 10% раствором натрия карбоната, помещают в сушильный шкаф и выдерживают при температуре ПО °С в течение 2 мин, затем опрыскивают диазотированным сульфацилом и нагревают при температуре 110 °С в течение 2 мин. На хроматограмме должно проявиться пятно красноватого цвета с  $R_f$  около 0,42 (салидрозид); допускается наличие других пятен.

**Примечание.** Подготовка пластинок: пластинки "Силуфол Уф-254 15x15 см разрезают поперек линий накатки на 3 части размером 15x5 см и перед нанесением извлечения высушивают в сушильном шкафу при 110С в течении 1 ч

**Числовые показатели. Цельное сырье.** Салидрозид не менее 0,8 %; влажность

не более 13 %, золы общей не более 9 %; Других частей растения (листьев, стеблей, в том числе отделенных при анализе)- не более 4 %; органической примеси не более 1 %; минеральной примеси не более 3 %.

**Измельченное сырье:** Салидрозида не менее 03 %; влажность не более 12%; золы общей не более -8%; частиц не проходящих сквозь сито с отверстиями диаметром 7 мм, ж более 10 %; частиц, проходящих сквозь сито с отверстиями размером 0.5 мм, не более 2 %; органической примеси не более 1 %; -минеральной примеси не более 3 %.

**Количественное определение.** Аналитическую пробу сырья измельчают до размера частиц, проходящих сквозь сито с отверстиями диаметром 2 мм. Около 05 г (точная навеска) измельченного сырья помещают в колбу вместимостью 100 мл, прибавляют 10 мл воды и нагревают на кипящей водяной бане с обратным холодильником в течение 15 мин.

Затем извлечение фильтруют через бумажный фильтр в мерную колбу вместимостью 50 мл, избегая попадания частиц сырья на фильтр. Экстракцию повторяют еще 3 раза по 10 мл воды, нагревая каждый раз в течение 10 мин и фильтруя в ту же мерную колбу.

К охлажденному фильтрату прибавляют 6 мл 0 % растворе свинца ацетата, 2 мл насыщенного раствора натрия сульфата, тщательно перемешивают, доводят объем раствора водой до метки и фильтруют через бумажный фильтр. Первые 1 мл фильтрата отбрасывают.

В мерную колбу вместимостью 25 мл переносят 5 мл полученного фильтрата, прибавляют 2,5 мл 2 % раствора натрия карбоната, 2,5 мл диазотированного сульфанила, доводят объем раствора водой до метки, перемешивают и через 5 мин измеряют оптическую плотность на спектрофотометре при длине волны 486 нм в кювете с толщиной слоя 10 мм, используя в качестве раствора сравнения воду.

Содержание салидрозида в пересчете на абсолютно сухое сырье в процентах ( $X$ ) вычисляют по формуле:

$$X = \frac{D * 250 * 10}{253 * m * (100 - W)}$$

где  $D$  - оптическая плотность анализируемого раствора, 253 — удельный показатель поглощения (СИ) салидрозида;  $m$ —масса сырья в граммах;  $W$  — потеря в массе при высушивании сырья в процентах.

**Примечания.** 1 Приготовление диазотированного сульфанила: 7 г сульфанила-натрия растворяют в 50 мл воды в мерной колбе вместимостью 100 мл, прибавляют 9 мл концентрированной хлористоводородной кислоты и доводят объем раствора водой до метки, 1 мл полученного раствора помещают в мерную колбу вместимостью 100 мл, ставят на лед, прибавляют 50 мл воды, 0,2 мл 10% раствора натрия нитрита, перемешивают и доводят объем раствора водой до метки. Раствор применяют свежеприготовленным.

2. Приготовление насыщенного раствора натрия сульфата: 60 г натрия сульфата заливают 100 мл воды и оставляют при частом взбалтывании на 24 ч

**Упаковка.** Цельное сырье упаковывают в тюки из ткани не более 50 кг нетто или в мешки тканевые либо льно-джуто-кенафные не более 30 кг нетто; измельченное — в мешки тканевые или льно-джуто-кенафные не более 30 кг нетто.

**Срок годности** 3 года.

**Тонизирующее средство.**

ROSA RUGOSA

Oncology: Antimutagenic characteristics were noted in the syrup of Rosa rugosa (test subjects were not indicated), (1).

Pharmacological action: Antioxidant, membrano-stabilizing, anti-inflammatory, bile-expelling (2).

Data from folk medicine: Infections, wounds, burns, gastric ulcer, tumors, sclerosis (2).

Use in modern medicine: Hypo- and avitaminosis. Liver diseases, and also during heavy workloads and different diseases accompanied by the increased need of the organism for vitamins (2).

Conclusion: The fruit of rosa rugosa possesses antioxidant action. The rosa rugosa is a natural multi-vitamin. The preparations of rosa rugosa are extremely important for the prevention of atherosclerosis (3).

## Literature:

ONCOLOGY

1) Grinevich M.A. Synopsis of Various Studies on Extracts of Plant Origin, page 41

PHARMACOLOGICAL ACTION, DATA FROM FOLK MEDICINE, USE IN MODERN MEDICINE

2) Specifications for the Ingredients of the Base Elixir, received in a parcel from Volodya (May, 1992).

3) Brekhman I.I. Elixir for Health and Vigor, page 26.

## ROSA RUGOSA

Distribution: In Russia: Primorye, Priamurye, Kamchatka, Sakhalin, Kuril islands.

Abroad: Korea, Japan, Northeastern China.

Cultivated: China

Appearance: Bushes with thorns, the height is up to 2 m.. The leaves are alternate, imparipinnate. The flowers are large, aromatic. The fruit is complex, succulent, berry-like. The fruits are small nuts of an angular form. It blooms from May to July. It ripens in August-September.

Usable part: Fruits.

Gathering periods: September-October

Resources: Yearly harvesting many tons within the Far East.

Gathering: Harvesting of the Rosa's fruits is carried out in August-September, when the fruits are an orange-reddish and reddish color. Gathering of the fruits should be completed before light frost since after the frost during thawing the content of vitamins in Rosa is reduced, besides which, thawing fruits are not suitable for drying. The fruits of Rosa rugosa are gathered in baskets or pails. The fresh fruits may be kept in the tare for no more than 2-3 days. After that they mold and the vitamin content is decreased.

Drying: After gathering it is necessary to spread the Rosa's fruits for drying as soon as possible in a 2-3 cm. layer, on beddings, metal shelves, etc. in warm, well ventilated premises. The raw materials should be shuffled from time to time. However, this way of drying is very long and does not provide preservation of vitamin C. Therefore, the thermal drying is preferred in dryers of a different type at a temperature of heating of the fruits 80-90°C. At this temperature the fruits dry fast without a significant loss of vitamins.

Organoleptic indicators: According to GOST 1994-76 the dry Rosa fruits should meet the following requirements: the Rosa fruits are proliferative, fleshy, with receptacles, succulent during ripening, inside of which are a lot of small fruits - nuts. Dried fruits have different shapes: from spherical, egg-shaped or oval to strongly outstretched, spindle-like form with a length of 0.7-3 cm., diameter - 0.6-1.7 cm. The color of fruits is from orange-reddish to reddish-brown. Some fruits keep sepals directed up and sometimes closed. During cleaning the sepals are broken off and a small round whole stays in the fruit. The walls of the dried fruits are hard, fragile, external surface is more

or less wrinkled. Inside the fruits are abundantly covered with long, very rigid cilia. Shorter cilia are on the pointed end of the nut.

Numeric indicators:

- Ascorbic acid no less than 0.25%
- Humidity no more than 14%
- total ash no more than 3%.
- other parts of Rosa rugosa no more than 1%
- darkened, burned, fruits damaged by pests and their parts no more than 1%.
- ground down particles of fruits including small nuts passing through a sieve with an opening of 3 mm no more than 3%.
- organic admixtures no more than 0.5%.
- mineral admixtures no more than 0.5%.

Packaging: Ready raw material are packaged into cloth sacks, linen-hemp, no more than 25 kg. each.

Storage: The shelf life is 2 years.

Chemical composition: The fruits are characterized by a large content of vitamins. In a recalculation for dry weight of fruits: ascorbic acid to 5%, carotene to 10%. The fruits' oil contains 170-220 mg.% of tocopherols (vitamin E), and also linoleic, linolenic and oleic acids. 4% of vitamins of the P group, vitamins E, K, B, B<sub>1</sub>, about 14% of pectic substances, organic acids and sugar (24% of general sugars, 18% of invert sugar, 5% of sucrose and 9% pentosan) are contained in fresh fruits.

Preparations: Fruit tincture, based on the calculation 10:200 ml. of water. The dose is 1/2 of a glass, 2 times per day. Vitaminized syrup from fruits. The dose is 1 tea spoon, 2-3 times per day.

Pharmacological action: Antioxidant, membrano-stabilizing, anti-inflammatory, bile-expelling.

Data from folk medicine: Infections, wounds, burns, gastric ulcer, tumors, sclerosis.

Use in modern medicine: Hypo and avitaminosis. Liver diseases, and also during heavy work loads and different diseases accompanied by the increased need of the organism for vitamins.

List Contains 1 Item.

Current Database: 1990-1992 [December] Unabridged MEDLINE

Current Search Formulation: "ROSA MAJALIS"

UNIQUE NLM IDENTIFIER: 91006942

AUTHOR(S): Swanston-Flatt SK; Day C; Bailey CJ; Flatt PR

AUTHORS ADDRESS: Biomedical Sciences Research Centre, University of Ulster, Coleraine, UK

ARTICLE TITLE: Traditional plant treatments for diabetes. Studies in normal and streptozotocin diabetic mice.

ARTICLE SOURCE: Diabetologia (Germany), Aug 1990, 33(8) p462-4

ABSTRACT: The effects on glucose homeostasis of eleven plants used as traditional treatments for diabetes mellitus were evaluated in normal and streptozotocin diabetic mice. Dried leaves of agrimony (*Agrimonia eupatoria*), alfalfa (*Medicago sativa*), blackberry (*Rubus fruticosus*), celandine (*Chelidonium majus*), eucalyptus (*Eucalyptus globulus*), lady's mantle (*Alchemilla vulgaris*), and lily of the valley (*Convallaria majalis*); seeds of coriander (*Coriandrum sativum*); dried berries of juniper (*Juniperus communis*); bulbs of garlic (*Allium sativum*) and roots of liquorice (*Glycyrrhiza glabra*) were studied. Each plant material was supplied in the diet (6.25% by weight) and some plants were additionally supplied as decoctions or infusions (1 g/400 ml) in place of drinking water to coincide with the traditional method of preparation. Food and fluid intake, body weight gain, plasma glucose and insulin concentrations in normal mice were not altered by 12 days of treatment with any of the plants. After administration of streptozotocin (200 mg/kg i.p.) on day 12 the development of hyperphagia, polydipsia, body weight loss, hyperglycaemia and hypoinsulinaemia were not affected by blackberry, celandine, lady's mantle or lily of the valley. Garlic and liquorice reduced the hyperphagia and polydipsia but did not significantly alter the hyperglycaemia or hypoinsulinaemia. Treatment with agrimony, alfalfa, coriander, eucalyptus and juniper reduced the level of hyperglycaemia during the development of streptozotocin diabetes. This was associated with reduced polydipsia (except coriander) and a reduced rate of body weight loss (except agrimony). Alfalfa initially countered the hypoinsulinaemic effect of streptozotocin, but the other treatments did not affect the fall in plasma insulin. The results suggest that certain traditional plant treatments for diabetes, namely agrimony, alfalfa, coriander, eucalyptus and juniper, can retard the development of streptozotocin diabetes in mice.

List Contains 1 Item.

Current Database: 1993 [January-February] Unabridged MEDLINE

Current Search Formulation: "ROSA MAJALIS"

UNIQUE NLM IDENTIFIER: 93046848

AUTHOR(S): Seto T; Yasuda I; Akiyama K

AUTHORS ADDRESS: Department of Pharmaceutical Sciences, Tokyo Metropolitan Research Laboratory of Public Health, Japan.

ARTICLE TITLE: Purgative activity and principals of the fruits of *Rosa multiflora* and *R. wichuraiana*.

ARTICLE SOURCE: Chem Pharm Bull (Tokyo) (Japan), Aug 1992, 40(8) p2080-2

ABSTRACT: Pseudocarps or seeds of *Rosa multiflora*, crude drug "Eijitsu" have been used as purgative in Japanese traditional medicine. *R. wichuraiana* was generally thought to be able to substitute for the plant. The n-butanol fractions of both plant seeds were tested on purgative activities with mice, and the values of the 50% effective dose (ED50) were 5.6 g/kg as the seed weight for *R. multiflora* and 57 g/kg as the seed weight for *R. wichuraiana*. From pseudocarps of *R. multiflora*, a new purgative compound, multinoside A acetate, was isolated, and its ED50 value was tested to be 150 mg/kg (77-291 mg/kg, 95% confidence limit). The other isolated compounds were three known quercetin glycosides, quercetin 3-O-xyloside, isoquercitrin and hyperin. From pseudocarps of *R. wichuraiana*, three quercetin glycosides, isoquercitrin, hyperin and quercetin 3-O-beta-D-glucuronide were isolated similarly, but no purgative components of *R. multiflora* were detected.