RADIX SAPONARIAE ALBAE, Soaproot Root (Çöven Kökü)

- Roots and rhizomes of *Gypsophila* species from Caryophyllaceae family that are removed from the soil in spring and then cleaned.
- *Gypsophila paniculata*--South Europe
- *G. arrostii var. nebulosa*--Konya, Isparta, Burdur, Uşak, Elmalı
- *G. eriocalyx*---Çorum, Çankırı, Ankara, Kırşehir, Sivas
- *G. bicolor*---Van Lake
- *G. perfoliata var. anatolica*----Grows around Niğde and used in obtaining the drug.

RADIX SAPONARIAE ALBAE, Soaproot Root (Çöven Kökü)

- 25 species grow naturally in Turkey.
- Roots and rhizomed that are used as drug are cylindrical with a diameter of 3-5 cm having longitudinal wrinkles, and have transverse lines in some parts. Leads to sneezing when fractured.
- Contains 15-20% triterpene saponin.
- Its aglycone is gypsogenin and triterpenic saponoside is obtained by binding 8 molecules of sugar and 1 molecule of glucuronic acid.

RADIX SAPONARIAE ALBAE, Soaproot Root (Çöven Kökü)

- Used as depurative and in the making of halvah traditionally.
- Used for obtaining COMMERCIAL GRADE SAPONIN in Europe.
- Saponin is used in textile industry and also as an emulgator in pharmaceutical technology.

RADIX SAPONARIAE ALBAE, Soaproot Root (Çöven Kökü)

- To obtain saponin;
- Drug is extracted with Petroleum ether----lipids and resin are removed.
- Then extracted with very hot (boiling) EtOH or MeOH.
- Alcoholic extract is evaporated, then cooled---saponin precipitates
- Or saponin precipitated when ether is added

RADIX SAPONARIAE RUBRAE, Soapwort root, Sabunotu kökü

- *Saponaria officinalis* (Caryophyllaceae) roots are used as drug.
- Grows in especially humid regions of Europe, North Anatolia.
- The drug is thinner than soaproot, reddish-brown colored and lacks lines on the surface
- Roots contains 5% triterpene saponins (Saporubin)
- Saporubin---acidic hydrolysis---gipsogenin+sugars

RADIX SAPONARIAE RUBRAE, Soapwort root

- Leaves are rich in respect to Vit. C. Also contains flavonosides.
- Diuretic
- Expectorant
- Emulgator in pharmaceutical technology
- Used as depurative traditionally

CORTEX QUILLAJAE
Soapbark, Panama Kabuğu

- ***Quillaja saponaria*** **(Rosaceae) stem barks.**
- **Big evergreen trees that grow up to 15-20 m in Chile and Peru.**
- **Contains 8-10% triterpene saponins (Quillajasaponin)**
- **Quillajasaponin → acidic hydrolysis → Quillaic acid+sugars**

CORTEX QUILLAJAE
Soapbark

- Toxic. Can not be used internally.
- Detergent
- Used as an emulgator in the production of externally used emulsions (e.g. shampoo)

CORTEX CONDURANGO

Condurango bark

- *Marsdenia condurango* (Asclepiadaceae) stem and branch barks
- Originated from South America
- Contains a steroidal saponoside
- Condurangoside (Condurangin) → acid hydrolysis → condurangogenin + simaraose + tevetose + gl.

CORTEX CONDURANGO

Condurango bark

- **Used as an appetite enhancer in old times**
- **Determined to possess cytostatic effect, as well.**
- **Below mentioned plants that grow in Anatolia contains the below saponins;**
- **Marsdenia erecta roots--marsdenoside**
- ***Vincetoxicum officinale* roots--vincetoxoside.**

SUCCUS LIQUIRITIAE (TK), Licorice (Meyan balı)

- Obtained by extracting the roots of *Glycyrrhiza glabra* varieties with hot water, and then molding into a substance having the viscosity of honey
- Blackish-brown colored, sweet drug that breaks like glass when dried.
- Differentiated from Aloe due to its taste and the dark color of its powder.
- All substances that are present in the roots are also present in this drug

SUCCUS LIQUIRITIAE (TK), Licorice (Meyan balı)

- Against coughing in the form of pastille;
- Expectorant
- Against hoarseness
- In the making of cigarettes
- In confectionary
- In the production of soft drinks.

GLYCYRRHIZIC ACID (Glycrrhizin)

- ***Obtained from plants other than Glycyrrhiza glabra*** **varieties:**
- ***Abrus precatorius-*****---Jamaican licorice**
- ***Periandra dulcis-*****--Brazilian licorice**
- ***Polypodium vulgare***
- ***Trifolium alpinum*****.**
- **Substances that are classified under the name Glycyrrhetins are used in ulcer treatment.**

AMMONIUM GLYCYRRHIZATE, Glizin

- Ammonium salt of glycyrrhizic acid.
- Obtained by extracting Succus liquiritiae or the roots with water containing NH_3.
- Anti-inflammatory and antispasmodic
- Used against Addison disease

SODIUM CARBENOXOLON

- Disodium salt of glycyrretic acid (aglycone) succinic acid. Semi-synthetic.
- Found in the composition of preparations used againts stomach and duedonal ulcers.
- Anti-inflammatory
- Exerts an effect like aldosteron.
- Leads to retaining of Na^+ and Cl^- ions in the body.
- May lead to high blood pressure
- May lead to K^+ deficiency.

HERBA CENTELLAE ASIATICAE (Gotu Kola---Comercial name)

- Obtained from *Centella asiatica*
- Aerial parts that are dried under sun.
- Fresh and dried leaves and stems
- Grows in Southeast Asia, India, Sri Lanka, China
- Grows in Madagascar, South Africa, South America, Mexico, Venezuella.

HERBA CENTELLAE ASIATICAE (Gotu Kola---Commercial name)

- Triterpenic acids:
- Asiatic acid
- Madecassic acid (6 hydroxy asiatic acid)
- Terminolic acid
- Pseudosaponins:
- Asiaticoside
- Asiaticoside A and B
- Essential oil: 0.1%

HERBA CENTELLAE ASIATICAE (Gotu Kola---Commercial name)

- **EFFECT**

- Effect is due to the triterpenic acids and their glycosides (asiaticoside and madecassoside) that it contains.

- Extracts,
- Anti-inflammatory
- Antineoplastic---shows activity directly on DNA
- Protective against ulcer----especially in stress related ulcers
- Wound healing
- May lead to contact dermatitis in sensitive poeple.

HERBA CENTELLAE ASIATICAE (Gotu Kola---Commercial name)

- Used in the form of capsule, liquid and pommade ul.
- MADECASSOL POMADE preparation is present in the market also in TURKEY!!.
- Contains 1% asiaticoside.
- Used as cicatrizant.
- Used in wounds, burns (sunburns and against various scars).

SEMEN HIPPOCASTANI, Horsechestnut (At Kestanesi)

- Obtained from *Aesculus hippocastanum* (Hippocastanaceae).
- Origin: the Balkans, grown in Turkey as an ornamental tree.
- Two other species are aso found in Turkey: *A. pavia* and *A. carnea*.
- 1) Triterpene Saponins:
- Escin complex--- is a heteroside mixture of PROTOESCIGENIN and BARRINTOGENOL C sapogenins.

SEMEN HIPPOCASTANI, Horsechestnut (At Kestanesi)

- Esterification
- –OH at the 21st carbon esterifies with---angelic acid/ tiglic acid.
- –OH at the 22nd carbon esterifies with---acetic acid/ α-methyl butiric acid/ isobutiric acid.
- A triholoside binds to the –OH at the 3rd position.
- (glucuronic acid+glucose+glucose/xylose/galactose)

SEMEN HIPPOCASTANI, Horsechestnut (At Kestanesi)

- Escin complex is the mixture of nearly 30 saponins.
- The majority consists of; protoessigenol esters+ glucuronic acid + glucose +glucose.
- Escin complex --*Helix pomatia* enzyme---hydrolysis in a neutral environment----sugars+ alkaline hydrolysis (ester bonds open)--- 80% Protoescigenin + 20% Barrintogenol C forms.

SEMEN HIPPOCASTANI, Horsechestnut (At Kestanesi)

- Escin complex----acidic hydrolysis---sugars+alkaline hydrolysis (ester bonds open)----Escigenin + Barrintogenol D forms

SEMEN HIPPOCASTANI, Horsechestnut (At Kestanesi)

- 2) Flavonoside:
- Kaempferol, quercetin (flavonol derivative)
- Proantosiyanidols
- 3) Coumarin:
- Esculoside
- Fraxoside
- 4) Compounds resembling tannins
- Esculitannin

SEMEN HIPPOCASTANI, Horsechestnut (At Kestanesi)

- **Effect-Usage**

- **Anti-inflammatıry --- due to saponins**
- **Vit. P activity --- due to flavonoids. Strengthens capillary vein walls.**
- **Used in venous disorders (haemorrhoid, varicose veins, phlebitis)**

SEMEN HIPPOCASTANI, Horsechestnut (At Kestanesi)

- Used in combination with drugs such as Rhyzoma Hydrastis, Folia Hamamelidis, Cortex Viburni
- Edema inhibitor via I.V. route.
- Has a slight fungustic effect as well.

SEMEN HIPPOCASTANI, Horsechestnut (At Kestanesi)

- Has more than 125 preparations throughout the world.
- In Turkey!!;
- PREPAGEL®
- ---- Escin+Diethylaminsalicylate
- REPARİL GEL N®
- ---- Escin+Diethylaminsalicylate

RADIX PRIMULAE (EP)

- *Primula officinalis* (*P. veris*) (Primulaceae)
- Roots and rhizomes of primrose are used.
- 10-50 cm long, leaves form rosette on the ground, flowers golden yellow, grows especially in water-meadows.
- Roots are 10-12 cm long, 5-6 mm thick, has faint odor and tastes like anise.

RADIX PRIMULAE (EP)

- 5-10% triterpene saponins
- Sapogenols;
- Primulagenol A
- Primulagenol D
- Echinosistic acid
- Sugars;
- Gl/ gal./ rhamnose/ galacturonic acid

RADIX PRIMULAE (EP)

- Used as expectorant.
- Increases bronchial secretion
- Anti-inflammatory
- In acute and chronic sinusitis
- Used in common cold, approved by Commision E.
- 1.5 g/100 mL decoction is prepared
- Daily dosage of dry extract is 0.1 g

TUBERA CYCLAMENI, Cyclamen Tuber (CYCLAMEN)

- Tubers of *Cyclamen europaeum* (Primulaceae). European plant.
- Contains a triterpene saponin called Cyclamin.
- Cyclamin ---acidic hydrolysis.---cyclamiretin+gl+xyl.+arabinose
- Isomers of its aglycones are present
- Differences:
- Whether they carry double bond, or not
- Epoxide
- -CHO groups
- -According to their -OH numbers.

TUBERA CYCLAMENI, Cyclamen Tuber (CYCLAMEN)

- Diuretic
- Antiexudative
- Against tinnitus
- Against ecchymosis and hematomas (due to the hemolytic effect of saponosides)
- Infusions---insecticide

TUBERA CYCLAMENI, Cyclamen Tuber (CYCLAMEN)

- Lowers cholesterol
- Antimicrobial
- Antitumoral
- Against menstrual complaints.

RADIX GINSENG (GINSENG)

- Roots of *Panax ginseng* C.A. Meyer (Araliaceae) plant
- 100 cm, has taproot, herbaceous and perennial
- Grows naturally in China, Japan and Korea.
- Means man root in Chinese.
- Does not grow naturally in our country, however it is confused with *Bryonia* roots.
- *Panax repens*------in Japan
- *P. quinquefolium*----grows in North America

RADIX GINSENG (GINSENG)

- **Lateral roots of the roots collected in spring and fall are removed, then kept in water for 1-2', then dried and cut into parts with a diameter of 10-25 cm tutulur and then sold.**
- **It is marketed especially in Europe in recent years.**

❖**Triterpenic Saponins**

❖ **Ginsenoside (panaxoside) -----oleanolic acid type**

❖**Panaxadiol and Panaxatriol ----dammarane type**

RADIX GINSENG (GINSENG)

- **Steroidal----β-sitosterol and stigmasterol**
- **Polyholoside----Panaxanes**
- **Vit. B-----riboflavin and thiamine**

- **Ginseng is a natural product having increased use continually**
- ***Panax* genus derives from the Latin word "Panacea" which means "complete healing".**

RADIX GINSENG (GINSENG)

- **EFFECT- USAGE**

- An immunistimulant drug
- Psychosomatic
- Against tiredness
- Lowers blood sugar
- Activates cerebrocortical cells

RADIX GINSENG (GINSENG)

- **CNS stimulant in low doses, CNS sedative in high doses**
- **Activates protein synthesis**
- **Increases biosynthesis of cholesterol that can be converted to bile acids, lowers cholesterol level in blood**

RADIX GINSENG (GINSENG)

- Tonic
- Aphrodisiac and against sexual impotence
- Used against anemia
- For the treatment of stress related ulcer and gastritis
- To provide second youth
- Cytotoxic
- HOWEVER can lead to HYPERTENSION

RADIX GINSENG (GINSENG)

- **PREPARATIONS**

- **Panax Ginseng 50 cap.---520 mg *P. ginseng***
- **Ginzip (Ginseng Extract) 30 soft gel---100 mg Ginseng root extract**
- **Manchurian Ginseng softgel---250 mg**
- **Manchurian Ginseng tablet---500 mg**

RADIX GINSENG (GINSENG)

- **PREPARATIONS**

- **Gin-action 30 tab (250 mg)---Contains 250 mg Korean Ginseng extract equivalent to 400 mg standardized Korean Ginseng root (contains 24% Ginsenoside)**
- **Ginseng Power max cap. (1000 mg)---Chines red Ginseng extract--300 mg (10% ginsenoside)**

RADIX GINSENG (GINSENG)

- ----------Korean white Ginseng extract--300 mg (10% ginsenoside)
- ----American Ginseng extract----200 mg (10% ginsenoside)
- -----Siberian Ginseng extract---200 mg (10% Eleutheroside B and E)

RADIX GINSENG (GINSENG)

- **Ginseng Gum---- Ginseng root+ Royal jelly+ Caffeine**
  - **WARNING!!!!**
- **1) Must be used with precaution in patients with hypertension anand diabetes**
- **2) May lead to hypertension with a high percentage of caffeine**
- **3) May cause bleeding in post-menapausal women**
- **4) Must not be used during pregnancy.**

RADIX ELEUTHEROCOCCI, Siberian Ginseng Root (Sibirya Ginseng Kökü) (EP)

- *Eleutherococcus senticosus* (*Acanthopanax senticosus*) (Araliaceae)
- Triterpene saponins----Eleutheroside (I,K,L,M)
- Steroidal glycosides---- Eleutheroside A
- Coumarin----Isofraxidin (hydroxy coumarin)
- Caffeic acid derivatives---Chlorogenic acid
- Lignan (phenyl propanoid structure)---Sesamin and Eleutheroside D
- Polyholoside-----Eleutheran A-G

RADIX ELEUTHEROCOCCI, Siberian Ginseng Root (Sibirya Ginseng Kökü) (EP)

- **EFFECT-USAGE**

- Anti-ageing
- Hypoglycemic
- Immunostimulant due to polyholoside
- Antitumoral
- Regulates blood circulation---reduces risk of heart attack
- Contrandicated in HYPERTENSION!!!!!!!!!!!!

RADIX ELEUTHEROCOCCI, Siberian Ginseng Root (Sibirya Ginseng Kökü) (EP)

- **PREPARATION**

- Siberian Ginseng cap.
- Ginseng (Solgar) (Siberian)---contains 520 mg Siberian Ginseng

FOLIA VISCI (Euroepan Mistletoe)

- *Viscum album* (Loranthaceae)
- Ökse otu, Çekem, Burç in Turkish
- Lives as a parasite on apple, pear and pine trees
- A semi-parasite with chlorophyll
- Does not shed leaves in winter
- Fresh fruits are at the size of a pea

FOLIA VISCI (Euroepan Mistletoe)

- Lowers blood pressure—used against arteriosclerosis
- Diüretic---due to saponoside and choline that it contains
- Immunostimulant----due to polyholoside
- Against cancer---due to lectins
- Exerts toxic effect at high dose that leads to cardia arrest at systole – due to viscotoxin
- In Turkey, the seeds of the plant are used as Diuretic
- Antispasmodic

FOLIA HEDERAE HELICIS, English Ivy (Duvar sarmaşığı)

- *Hedera helix* (Araliaceae)
- A climbing plant
- Widespread in Europe and North Anatolia
- Contains triterpene saponins----Hederacoside A
- Hederacoside A---acidic hydrolysis---hederagenol+rh+arabinose

FOLIA HEDERAE HELICIS, English Ivy (Duvar sarmaşığı)

- **EFFECT-USAGE**

- Expectorant
- Antispasmodic – due to saponosides
- Used against pain in cellulities in the form of a massage preparation.
- Decoctions prepared from fresh plant are applied as a hot compress to painful areas
- Liniments are also used for the same purpose
- Alcoholatures are used against rheumatic pain.
- FRESH LEAVES MAY LEAD TO CONTACT DERMATITIS!!!!!!!!!!!!!!!!!!!!

FOLIA HEDERAE HELICIS, English Ivy (Duvar sarmaşığı)

- Avearege daily dose is a dose equivalent to 0.3 g drog.

- **PREPARATIONS**

- **PROSPAN® → In Turkey!!**

- **HEDELIX®**

- **MONAPAX®**