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# HERBAL TEAS POSSESING STIMULATORY ACTIVITY ON CENTRAL NERVOUS SYSTEM

# STIMULATION CENTRAL NERVOUS SYSTEM

- Especially plants which compounds with phenylethylamine and xanthine groups
- Catecholaminergic activity and/or effect on adenosine receptors

# CAFFEINE CONTAINING HERBAL TEAS

- Caffeine intake at high doses;
  - Anxiety
  - Restlessness
  - Insomnia
  - Palpitation
- Avoidance of caffeine after regular use may cause constipation due to the laxative effect of caffeine.
- In case of abstinence from caffeine intake after a long period may cause headache.
- Shouldn't be used during pregnancy and lactation periods.
- Patients suffering from hypertension, gastric ulcer and heart diseases aren't advised to consume beverages containing caffeine.

# CAFFEINE CONTAINING HERBAL TEAS

- *Camellia sinensis* (tea)
- *Coffea arabica* (coffee)
- *Paullinia cupana* (guarana)
- *Ilex paraguariensis* (mate)

# *CAMELLIA SINENSIS*

- Juvenile leaves
  - White tea... withered and dried using air flow
  - Green tea... steamed and dried leaves
  - Oolong tea ... half-fermented leaves
  - Black tea... fermented leaves
- Purine alkaloids (caffeine, theine), catechins, caffeic acid derivatives, tannin

# *CAMELLIA SINENSIS*

- Infusion ( $\approx$  %8-12 polyphenol) 3 times a day
- Tea-bag teas (1.8-2.2 g/bag) or dried leaves
- $\approx$  3 min. of steeping (longer time of steeping leads to higher tannin content)
- Antioxidant activity (the activity of green tea is higher than black tea)
- Thermogenic, antithrombotic, diuretic, antidiabetic, antibacterial
- Gastric distress may be eliminated by addition of milk (chlorogenic acid and tannin)

## CAMELLIA SINENSIS – DRUG INTERACTIONS

- Tannin content may lead to decreased absorption of drugs.
- Non-selective MAO inhibitors, catechol-O-methyltransferase inhibitors (hypertension risk)
- CYP1A2 inhibitors (nausea, tremor or palpitation due to the increase in plasma caffeine concentration)
- CNS stimulants (such as nicotine, amphetamine), selective  $\beta$ -adrenergic receptor agonists and sympathomimetic drugs
- Fe preparations (decreased absorption)

## *COFFEA ARABICA* (COFFEE)

- Roasted and powdered seeds
- Infusion/decoction/soluble coffee
- Caffeine (0.6-2.2%)
- Aromatic compounds are formed during roasting process
- Blokade of adenosine receptors



## PAULLINIA CUPANA (GUARANA)

- A thick paste of peeled, washed and dried seeds is prepared using water
- Paste is put in hot water, sweetened and consumed as tea.
- Caffeine, theophylline, theobromine, tannin, saponins
- Induce adrenergic activity via blockade of adenosine receptors
- Increase in physical/methal capacity
- Antioxidant, hepatoprotective, diuretic, hypocholesterolemic

## *ILEX PARAGUARIENSIS* (MATE)

- Dried leaves
- Infusion ( $\approx$  2 g drug), 5-10 min.
- Xanthine alkaloids (caffeine, theobromine), polyphenols (chlorogenic acid, caffeic acid, 3,4-dicaffeoylquinic acid, 3,5dicaffeoylquinic acid), triterpene saponosides

# *THEBROMA CACAO*

- Semen Cacao
- Fermented and dried seeds
- Theobromine, caffeine, lipid
- Residue on press of seeds to obtain cacao butter ... cacao powder

# PHENYL ETHYL AMINE GROUP

- Herba Ephedrae ... *Ephedra sinica*
- In Turkey; *E. major*, *E. campylopoda*, *E. distachya*
- Protoalkaloids (ephedrine, pseudoephedrine, methylephedrine, norephedrine)
- Influence on  $\alpha$ - and  $\beta$ -adrenergic receptors... inhibition of adrenaline and noradrenaline intake
- Milder effect in comparison with amphetamine
- CNS stimulation, thermogenic, hypertensive, vasoconstrictive effects
- Overconsumption; insomnia, anxiety, tremor
- Potential of abuse and addiction

## HERBS POSSESING ADAPTOGENIC EFFECT

- Adaptogen; regulatory agent which increases the resistance of the body against stress factors, and prevents from damages of these factors by providing adaptation of the organism.
  - Increases resistance to harmful factors of different physical, chemical, biological natures
  - Exhibits normalizing effect on body by counteracting/preventing disturbance of stress
  - Doesn't cause disturbance to the normal functions of organism

## PANAX GINSENG (GINSENG)

- Dried roots
- Infusion (3 g – 5-10 min.) 3-4 times a day/3-4 weeks
- Saponosides (ginsenosides)
- Adaptogenic effect
- Patients suffering from heart diseases or diabetes shouldn't consume.
- Consumption with anticoagulants is not advised.
- Concurrent consumption with MAO inhibitors is not advised.
- Effects rising from adulteration with less expensive drugs should be considered (*Mandragora officinarum*, *Rauwolfia serpentina*, *Cola* sp.)

# *DORSTENIA CONTRAYERVA*

- Infusion prepared using roots
- Cardenolides, furanocoumarines, essential oil
- Used as stimulant ve adaptogen in folk medicine
- Diaphoretic effect
- Photosensitivity risk through skin contact