Medical Marijuana in Jamaica

Professor Wendel Abel
Not a shoe will sell.......People do not wear shoes.
People have no shoes.

Great Market!
Medical Marijuana

Not new to Jamaica!
The Scientist Behind Medical Marijuana - Jamaica

Professor Manley West

Dr Albert Lockhart
Drug For Medical Marijuana Approved in Jamaica

• Among the first countries to approve a drug for medical marijuana

• The drugs approved were - Canosol & Asmasol
Medical Marijuana Products before 1937
CANASOL

- One of the first cannabis pharmaceuticals developed
- Research started 1973 and introduced to market in 1987
- Available in local pharmacies
- Marketed legally in the USA & UK

WIMJ, 1978; 27:16-25
West ME, Lockhart AB. Br J Anaeasth 76:167
Are we then involved in a conversation for a time long past .............
Fighting alligators
or
Draining the swamp
GANJA IN JAMAICA

The effects of marijuana use

Vera Rubin and Lambros Comitas

SPONSORED BY THE CENTER FOR STUDIES OF NARCOTIC AND DRUG ABUSE AND THE NATIONAL INSTITUTE OF MENTAL HEALTH
Medical Marijuana
Long but turbulent history

• Over 5000 years

• 6000 BC – seeds used as food in China

• 2727 BC – medicinal use recorded in China

• US Pharmacopoeia - (1854- 1941)

• Before 1937 – over 2000 cannabis preparation
Sir William Osler - 1892

Treatment of Migraine
WHY DID IT GET UNPOPULAR?
Reefer Madness Hysteria
Marihuana Act – 1937
(Roosevelt)
Marihuana Act (1937)

• Taxed growers, users and purchasers

• Tax was unpayable

• Made marijuana difficult to obtain

• After this many states made the drug illegal
Harry J Anslinger
Commissioner of Federal Bureau of Narcotics
(1930-1962)
"There are 100,000 total marijuana smokers in the US, and most are Negroes, Hispanics, Filipinos and entertainers. Their Satanic music, jazz and swing, result from marijuana usage. “

Harry J. Anslinger
“This marijuana causes white women to seek sexual relations with Negroes, entertainers and any others."

“Reefers make darkies think they are good as white men"

Harry J. Anslinger
War on Drugs
Declared by USA in 1971
Why the surge in interest now?

• 2009 - Obama administration announced the prosecution of medical marijuana has low priority

• Approval of medical marijuana in USA and other countries

• Changing attitudes in Jamaica

• Economic benefits to Jamaica
The gates were open......

“Marijuana less dangerous than alcohol”
January 2014.
Another Game Changer!

WEED
A DR. SANJAY GUPTA SPECIAL
SUNDAY NIGHT 8 ET PT
Cnn
“I am here to apologize. I apologize because I didn’t look hard enough, until now. I didn’t look far enough. I didn’t review papers from smaller labs in other countries doing some remarkable research, and I was too dismissive of the loud chorus of legitimate patients whose symptoms improved on cannabis.

I mistakenly believed the Drug Enforcement Agency listed marijuana as a schedule 1 substance because of sound scientific proof. It doesn’t have a high potential for abuse, and there are very legitimate medical applications. In fact, sometimes marijuana is the only thing that works.”

- Dr. Sanjay Gupta, Neurosurgeon & CNN's Chief Medical Correspondent
Medical Marijuana States (USA)

• USA- 22 states and Washington DC

• Others – Kentucky, Minnesota, Ohio, Pennsylvania, Tennessee

• Uruguay – first in the region to challenge the USA

• Under consideration- Mexico, Chile, Argentina
States That Allow Medical Marijuana

States with allowances for medical marijuana.

Sources: Americans For Safe Access; Marijuana Policy Project
Medical Marijuana Countries

- Austria
- Italy
- Finland
- Germany
- Finland
- Germany
- The Netherlands
- Portugal
- Spain
- Canada
- Israel
- USA (22 States)
Medical Marijuana in the Region

• Uruguay – first country to legalise marijuana

• Under consideration – Mexico, Chile, Argentina........

• Jamaica still struggling with the issue
Attitudes of Jamaicans towards Medical Marijuana

80% Jamaicans think marijuana should be legalised for medical purposes

Don Anderson (December 2013)
Launch of Medicanja – Henry Lowe
A little about the drug
Marijuana

• Derived from the plant cannabis
• Most widely used illicit drug worldwide
• Global consumption – 4% adult population (162 million persons)
• Uses – recreational, religious- sacramental, medicinal
Cannabinoids

• Over 400 compounds

• Most common cannabinoids
  - Tetrahydrocannabinol (THC) - gives a high
  - Cannabidiol (CBD)
  - Cannabinol (CNB)
Phytocannabinoids

- Tetrahydrocannabinol (THC)
- Cannabidiol
- Cannabigerol
- Tetrahydrocannabinobivarin (THCV)
Cannabidiol (CBD)

• Exciting chemical
• Doesn’t interact with CB1 or CB2 receptors
• Inhibits anandamide degradation
• Antioxidants
• Potential benefits – in many medical conditions
Cannabidiol (CBD)

- Pharmacologically similar to antipsychotics
- Ameliorates the positive and negative symptoms of schizophrenia
- Greater effect on negative symptoms
- Better tolerated than antipsychotics (less cardio metabolic effects)
- Less movement effects

German Study 2012
CBD- Potential Benefits

- Antianxiety
- Anticonvulsant
- Anti-nausea
- Anti-inflammatory
- Antitumor properties
Mechanism of Action – CBD

CDB $\rightarrow$ Anandamide $\rightarrow$ Psychosis
How do these chemicals act on the body?
How Cannabis Works

Plant derived
(phytocannabinoids)
Buds, Tinctures, Extracts

Synthetic Cannabinoids
(Pharmaceutical Lab)
Patented Synthesized Compound
THC-only (Marinol)

ENDOCANNABINOID RECEPTORS

Regulates – appetite, pain, pleasure, immune system, mood & memory
Endocannabinoid System

- System in brain which recognizes THC and cannabinoids
- Activated by natural chemical
  - anandamide
  - 2-arachidonylcerol
THC and Anandamide
Endocannabinoid System

• CB1 receptors - The Central Nervous System
  (The most abundant receptors in the brain)

• CB2 receptors - Peripheral nervous system
  - Immune system
  - pancreas, bone
The Role - Endocannabinoid System

Regulates several physiological function

- Immune Response
- Food intake
- Cognition
- Emotion
- Perception

- Behavioural reinforcement
- Motor-coordination
- Body temperature
- Wake/sleep cycle
Endocannabinoid System

• Exciting opportunity to develop different agents

• Targeting multiple organ systems
Mode of action

**CB1 receptors**
- mainly localized in the brain
- (hippocampus, cerebellum and cerebrum)

**CB2 receptors**
- mainly situated in the periphery
- (spleen, tonsillar and immune cells)
Cannabinoid Receptor Sites

- Basal Ganglia
- Hippocampus
- Cerebellum
CB2: “off” switch of inflammation

Immune cell

Inflammatory signal

CB2 receptor

Pro-inflammatory: IL6, IL8, PGE2, LTB4

Anti-inflammatory: PGJ2, LXA4

Inflammation “ON”

Fibrosis “ON”

Inflammation “OFF”

Fibrosis “OFF”

COX

LOX

TGF-β
The Human Endocannabinoid System

THC and CBN are known to “fit” like lock and key into network of existing receptors. The Endocannabinoid System exists to receive cannabinoids produced inside the body called “Anandamide” and “2-Arachidonylglycerol”. Stimulating the ECS with plant-based cannabinoids restores balance and helps maintain symptoms.

CB1 receptors are concentrated in the brain and central nervous system but also sparsely populates other parts of the human body.

Receptors are found on cell surfaces.

THC
Tetrahydrocannabinol

CBD
Cannabidiol
CBD does not directly “fit” CB1 or CB2 receptors but has powerful indirect effects still being studied.

CBN
Cannabinol

CB2 receptors are mostly in the peripheral organs especially cells associated with the immune system.
Effects on the brain

- High
- Altered perceptions
- Altered mood
- Impaired co-ordination
- Difficulty with thinking and problem solving
- Disrupted learning and memory

- Smoking in early teens results in 8 point lost in IQ (New Zealand Study)
Marijuana’s Effects on the Brain

When marijuana is smoked, its active ingredient, THC, travels throughout the body, including the brain, to produce its many effects. THC attaches to sites called cannabinoid receptors on nerve cells in the brain, affecting the way those cells work. Cannabinoid receptors are abundant in parts of the brain that regulate movement, coordination, learning and memory, higher cognitive functions such as judgment, and pleasure.
<table>
<thead>
<tr>
<th>Brain Structure</th>
<th>Regulates</th>
<th>THC Effect on User</th>
</tr>
</thead>
<tbody>
<tr>
<td>Amygdala</td>
<td>emotions, fear, anxiety</td>
<td>panic/paranoia</td>
</tr>
<tr>
<td>Basal Ganglia</td>
<td>planning/starting a movement</td>
<td>slowed reaction time</td>
</tr>
<tr>
<td>Brain Stem</td>
<td>information between brain and spinal column</td>
<td>antinausea effects</td>
</tr>
<tr>
<td>Cerebellum</td>
<td>motor coordination, balance</td>
<td>impaired coordination</td>
</tr>
<tr>
<td>Hippocampus</td>
<td>learning new information</td>
<td>impaired memory</td>
</tr>
<tr>
<td>Hypothalamus</td>
<td>eating, sexual behavior</td>
<td>increased appetite</td>
</tr>
<tr>
<td>Neocortex</td>
<td>complex thinking, feeling, and movement</td>
<td>altered thinking, judgment, and sensation</td>
</tr>
<tr>
<td>Nucleus Accumbens</td>
<td>motivation and reward</td>
<td>euphoria (feeling good)</td>
</tr>
<tr>
<td>Spinal Cord</td>
<td>transmission of information between body and brain</td>
<td>altered pain sensitivity</td>
</tr>
</tbody>
</table>

The brain structures illustrated above all contain high numbers of CB receptors
What is Medical Marijuana?

The use of the following for medical purposes

• The plant (stem, leaf, seed, root, resin)

• Natural products removed from the plant

• Synthetic products – made in the lab
Medical Cannabis

Plant derived

(phytocannabinoids)
Buds, Tinctures, Extracts

THC  CBD  CNB
Psychoactive
Medical Cannabis

Products removed from plants

THC
CBD
CNB

Psychoactive
Medical Cannabis

Synthetic Cannabinoids
(Pharmaceutical Lab)
Patented Synthesized Compound

THC
CBD
CNB

THC-only (Marinol)
Not psychoactive
Routes of administration Marijuana

- Inhalation – smoking, vaporizing
- Orally – capsules, herbal tea, baked products
- Eye drops
Smoked Medical Cannabis

• Strong opposition to smoking

• Smoking associated with adverse effects

• Very little future in smoked cannabis as a medically approved medication

• Used anyway
Smoking of Cannabis

• Cannabis smoke contains many organic and inorganic compounds

• Tar is similar that found in cigarette smoke

• Includes many of the same carcinogens

Tomar et al, (2009)
Status of Research

• Over 20,000 published papers
• Most research limited to animal studies of THC and Cannabidiol
• Not much research on whole - plant material
• Most research outside of USA – stringent controls
  - NIDA supplies
  - DEA grants permission
Potential Therapeutic Uses of Medical Marijuana

- Gliomas
- Alzheimer's
- Fibromyalgia
- Dystonia
- Hepatitis C
- Diabetes
- Pruritus
- Osteoporosis
- MRSA
- Multiple Sclerosis
- ALS
- Chronic Pain
- Tourette's Syndrome
- HIV
- Hypertension
- Sleep Apnea
- GI Disorders
- Incontinence
- Rheumatoid Arthritis
Medical Uses

• Nausea and vomiting due to chemotherapy
• Appetite stimulant
• Glaucoma
• Seizure disorder (Fits)
• Pain
• Irritable Bowel Syndrome & Chrohn’s
• Premenstrual Syndrome
Medical Uses

• Brain diseases: cancer, Alzheimer’s Disease, Multiple Sclerosis, Epilepsy
• Psychiatry: Anxiety, Posttraumatic Stress Disorder
Cancer Research

- Cannabis reduces the spread of cancer cells via apoptosis (programmed cell death)

- Inhibits angiogenesis (formation of new blood vessels)
Countries Leading in Research

• Canada
• UK
• Israel
• Spain
Research at UWI - Psychiatry

• Interest in Cannabidiol in the treatment of mental disorders
  - Schizophrenia
  - Posttraumatic Stress Disorder
  - Anxiety Disorders

• Process of developing protocols
Marijuana Preparations Available
Drugs Currently Available

SATIVEX (herbal extract)
Drugs Currently Available

Synthetic THC

Dronabinol (MARINOL)  Nabilone (CESAMET)

Approved for chemotherapy related nausea and vomiting (FDA)
Synthetic products lack psychoactive properties
Absorption unpredictable
Drugs withdrawn

Rimonabant (Acomplia)

Approval denied in USA.
Approval withdrawn by the European Commission
Products Currently Available USA
Opposition to Medical Marijuana

- Addictive
- Leads to the use of harder drugs (Gateway effect)
- Interferes with fertility
- Driving ability
- Lung disease
- Immune system
- The brain – psychosis, short term memory
Is the addictive potential overstated?
Comparison of adverse effects of common substances of abuse

Most harmful drugs

Overall harm score

Harm to others (CW*54)  Harm to users (CW*46)

- Alcohol
- Heroin
- Crack
- Methylamphetamine
- Cocaine
- Tobacco
- Amphetamine
- Cannabis
- GHB
- Benzodiazepines
- Ketamine
- Methadone
- Mephedrone
- Butane
- Anabolic steroids
- Khat
- Ecstasy
- LSD
- Buprenorphine
- Mushrooms

*Cumulative Weight
Source: The Lancet
Dangers of medical Marijuana

• Garden grown – not pure, unrefined (‘a complex chemical slush’ Dupont)

• Benefits when smoked - not scientifically proven

• Need for more scientific research
Smoking Cannabis
Cannabis and Schizophrenia

• Cause – unresolved. Good evidence that it does not

• Unmasks - causes it to occur earlier in susceptible individuals

• Aggravates - Accumulating evidence, that cannabis exacerbates symptoms, cause more deficits
Patients at risk for psychotic like experience

- Strong family history of psychotic disorder
- A history of psychotic symptoms
- Heavy use
Estimated number of persons reporting cannabis use

• Life time prevalence of schizophrenia -1%

• 60% of patients report cannabis use (Abel et al)

• Estimated number of persons 15,000
Marijuana Use & Cognitive Impairment

• Short term memory
• Episodic memory
• Attention
• Executive function – decision making, complex tasks
Impact of Cannabis on Neurocognitive Function among Jamaican Adolescents
Powell-Booth, De La Haye and Longman-Mills

• All neurocognitive function affected
  - Long term & short term memory
  - Verbal intelligence
  - Attention
  - Working memory
  - Mental flexibility
Adolescent Cannabis Use

- Adolescence is a highly vulnerable period

- Use in adolescents leads to...
Economic Advantages Enormous

- Growers
- Delivery services
- Caregivers
- Doctors making recommendation
- Dispensaries
- Export
- Festivals
- Tourism
- Edibles – gums, cookies, candy
Can Marijuana Help Rescue California’s Economy?
Alison Salesman, Los Angeles, Time US, March 2009

• Pot is California’s biggest cash crop
• Estimated earnings to California = $14 billion
Legality of Cannabis

- Subject to international convention
- Countries have treaty obligation
- Legalizing would require denunciation of the Single Convention
- Legalising would require rescheduling of drugs
Medicinal Drugs Excluded from prohibition

Single Convention – Article 4 (c)

Excludes medicinal drugs from prohibition.

Article 4 (c): Subject to the provisions of this Convention, to limit exclusively to medical and scientific purposes the production, manufacture, export, import, distribution of, trade in, use and possession of drugs.
Ganja Commission (Jamaica 2001)

1. Amend laws to decriminalize ganja for
   - Private, personal use of small quantities by adults.
   - Medical use
   - Sacrament for religious purposes.

2. Decriminalization- should exclude smoking by juveniles or in public.

3. Education programme aimed at reducing demand among youth.
The longer we wait to give serious regional consideration to this subject, the further behind we lag in the inevitable legalisation of medical marijuana globally.

In the end, our Caribbean would consume the medical/health, cosmetics and other products legally grown and produced in the USA.
OPPORTUNITY IS NOWHERE