Department of Medical Research
(Lower Myanmar)

Bulletin

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CONTENT

The objective of this Bulletin is to disseminate international news about health and medicine, developments, activities in medical and health research in DMR (LM). The Bulletin is published monthly and delivered to township hospitals.

The Editorial Committee, therefore, invites contributions concerning information about research activities and findings in the field of medicine and health.

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NEWS ABOUT MEDICINE & HEALTH

Onion as a Medicine

Like its close cousins garlic, chives, scallions, and leeks, onion is a member of the lily family (Liliaceae). It is native to Eurasia but now grows all over the world, due mostly to people bringing it with them as a staple food wherever they migrated. The French explorer Pere Marquette was saved from starvation in 1624 by eating wild onions near the present site of Chicago—the name of the city is derived from a Native American word for the odor of onions [1]. The bulb of the plant is used medicinally.

Onion has been used as food for many centuries[1]. It was considered a weaker version of garlic by many herbal practitioners. Like garlic, onion has a longstanding but unsubstantiated reputation as an aphrodisiac [1]. Two sets of compounds make up the majority of onion's known active constituents—sulfur compounds, such as allyl propyl disulphide (APDS), and flavonoids, such as quercetin. Each of these groups of compounds has multiple medicinal actions.

The sulfur compounds form a strongly scented oil, particularly the compound known as thioproanal-s-oxide or lacrimatory factor. It is responsible for the tearing many people suffer while cutting onions [2]. Onion and onion oil constituents have been repeatedly shown to kill various microbes in the test tube [3]. Studies have not been conducted in humans to determine whether onion is a useful antimicrobial agent. APDS has effect of increasing the amount of insulin and reducing sugar levels in the blood [4]. Onion does not reduce blood sugar levels in healthy nondiabetic people [5]. Sulfur compounds in onion oil have also been shown to be anti-inflammatory action [6]. The anti-inflammatory effect is strong enough that subcutaneous onion injections and topical onion applications inhibit skin reactions to intensely inflammatory compounds in people with or without eczema [7]. Human studies have not been performed to determine whether onion would be useful in people with asthma or coughs, though the anti-inflammatory action cited above suggests it might be.

Human studies have proven mixed as to whether onion is helpful for people with atherosclerosis [8]. Intake of quercetin in the diet, primarily from onion, tea, and apples, has been linked to a decreased risk of having a heart attack [9]. One open clinical trial showed that a crude onion extract could lower blood pressure in some people with hypertension [10].

In a preliminary study of healthy male volunteers, administration of 50 grams of raw or boiled onion prevented the rise in serum cholesterol Induced by consumption of a high-fat meal [11]. The evidence on cancer prevention with onion suggests a benefit for some but not necessarily for all types of cancer. No protective effect against colorectal cancer was seen from higher onion intake [12]. Though some studies have found cooked onions acceptable, several studies suggest that onion constituents are degraded by cooking and that fresh or raw onions are probably most active [13]. If a tincture, syrup, or oil extract is used, 1 tablespoon three times per day may be necessary for several months before effects are noted [14]. Most people can eat onion in food without any difficulties. Higher intakes of onion may worsen existing heartburn, though it does not seem to cause heartburn in people who do not already have it [15]. There are also isolated reports of allergy to onion, including among people with asthma [16], manifesting as skin rash and red, itchy eyes. Onion is safe for use in children and, in small amounts in food, during pregnancy (though some pregnant women may have heart-burn that onions could exacerbate) and nursing. It is unknown whether larger amounts of onion are safe during pregnancy and nursing. One study did find that baby rats nursing from mothers that were fed onion developed a taste for onion and suffered no ill effects [17]. At the time of writing, there were no well-known drug interactions with onions.

Source: http://www.healthnotes.com . on 17th Nov 2006.

References

1. Onstad D. *A Guide for Adventurous Cooks, Curious Shoppers & Lovers of Natural Foods.* 1996:202–6.
2. Brodnitz MH, Pascale JV. *J Agric Food Chem* 1971;19:269–72.
3. Zohri AN, Abdel-Gawad K, Saber S. *Microbiol Res* 1995;150:167–72.
4. Sharma KK, Gupta RK, Gupta S, Samuel KC. *Indian J Med Res* 1977;65:422–9.
5. Sharma KK, Gupta RK, Gupta S, Samuel KC. *Indian J Med Res* 1977;65:422–9.
6. Dorsch W, Ettl M, Hein G, *et al*. *Int Arch Allergy Appl Immunol* 1987;82:535–6.
7. Dorsch W, Ring J. *Allergy* 1984;39:43–9.
8. Kleijnen J, Knipschild P, ter Riet G. *Br J Clin Pharmacol* 1989;28:535–44 [review].
9. Hertog MGL, Feskens EJ, Hooman PC, *et al. Lancet* 1993;342:1007–11.
10. Louria DB, McAnally JF, Lasser N, *et al*. *Curr Ther Res* 1985;37:127–131.
11. Sharma KK, Chowdhury NK, Sharma AL, Misra MB. *Indian J Nutr Diet* 1975;12:288–91.
12. Dorant E, van den Brandt PA, Goldbohm RA. *Carcinogenesis* 1996;17:477–84.
13. Ali M, Bordia T, Mustafa T. *Prostaglandins Leukot Essent Fatty Acids* 1999;60:43–7.
14. Louria DB, McAnally JF, Lasser N, *et al*. *Curr Ther Res* 1985;37:127–131.
15. Allen ML, Mellow MH, Robinson MG, Orr WC. *Am J Gastroenterol* 1990;85:377–80.
16. Valdivieso R, Subiza J, Varela-Losada S, *et al. J Allergy Clin Immunol* 1994;94:928–30.
17. Wuensch KL. *J Gen Psychol* 1978;99(2d Half):163–7.

Functional Foods: Their Role in Disease Prevention and Health Promotion (Part.1)

The tenet "Let food be thy medicine and medicine be thy food," espoused by Hippocrates nearly 2,500 years ago, is receiving renewed interest. In particular, there has been an explosion of consumer interest in the health enhancing role of specific foods or physiologically-active food components, so-called functional foods. Clearly, all foods are functional, as they provide taste, aroma, or nutritive value. Within the last decade, however, the term functional as it applies to food has adopted a different connotation -- that of providing an additional physiological benefit beyond that of meeting basic nutritional needs.

The term functional foods was first introduced in Japan in the mid-1980s and refers to processed foods containing ingredients that aid specific bodily functions in addition to being nutritious. The Institute of Medicine's Food and Nutrition Board (IOM/FNB, 1994) defined functional foods as "any food or food ingredient that may provide a health benefit beyond the traditional nutrients it contains."

Functional Foods from Plant Sources

Overwhelming evidence from epidemiological, *In vivo, in vitro*, and clinical trial data indicates that a plant-based diet can reduce the risk of chronic disease, particularly cancer. Health professionals are gradually recognizing the role of phytochemicals in health enhancement, aided in part by the Nutrition Labeling and Education Act of 1990 (NLEA).

Oats. Oat products are a widely studied dietary source of the cholesterol-lowering soluble fiber b-glucan. There is now significant scientific agreement that consumption of this particular plant food can reduce total and low density lipoprotein (LDL) cholesterol, thereby reducing the risk of coronary heart disease (CHD).

Soy. Soy has been in the spotlight during the 1990s. Not only is soy a high quality protein, it is now thought to play preventive and therapeutic roles in cardiovascular disease (CVD), cancer, osteoporosis,

and the alleviation of menopausal symptoms. The cholesterol-lowering effect of soy is the most well-documented physiological effect. Several classes of anticarcinogens have been identified in soybeans, including protease inhibitors, phytosterols, saponins, phenolic acids, phytic acid, and isoflavones. Of these, isoflavones (genistein and daidzein) are particularly noteworthy because soybeans are the only significant dietary source of these compounds. Isoflavones may act as anti-estrogens by competing with the more potent, naturally-occurring endogenous estrogens for binding to the estrogen receptor. This may explain why populations that consume significant amounts of soy have reduced risk of estrogen-dependent cancer. Soy may also benefit bone health. The theory that soy may alleviate menopausal symptoms was prompted by the observation that Asian women report significantly lower levels of hot flushes and night sweats compared to Western women. Most recently, 60 grams of ISP daily for 3 months reduced hot flashes by 45% in 104 postmenopausal women. Although these observations are exciting, there is a significant placebo effect in these studies, and it is too premature to suggest that soy may substitute for hormone replacement therapy.

Flaxseed. Among the major seed oils, flaxseed oil contains the most (57%) of the omega-3 fatty acid, a- linolenic acid. Recent research, however, has focused more specifically on fiber-associated compounds known as lignans. Consumption of flaxseed has been shown to reduce total and LDL cholesterol as well as platelet aggregation.

Tomatoes. Selected by Eating Well magazine as the 1997 Vegetable of the Year, tomatoes have received significant attention within the last three years because of interest in lycopene, the primary carotenoid found in this fruit, and its role in cancer risk reduction. Lycopene is the most efficient quencher of singlet oxygen in biological systems.

Garlic. The purported health benefits of garlic are numerous, including cancer chemopreventive, antibiotic, antihypertensive, and cholesterol- lowering properties.Garlic has also been advocated for the prevention of CVD, possibly through antihypertensive properties.

Broccoli and other Cruciferous Vegetables. Verhoeven *et a*l. (1997) attributed the anti-carcinogenic properties of cruciferous vegetables to their relatively high content of glucosinolates. Myrosinase, an enzyme found in plant cells, catalyzes these compounds to a variety of hydrolysis products, including isothiocyanates and indoles. Indole-3 carbinol (I3C) is currently under investigation for its cancer chemopreventive properties, particularly of the mammary gland. Although a wide variety of naturally occurring and synthetic isothiocyanates have been shown to prevent cancer in animals, attention has been focused on a particular isothiocyanate isolated from broccoli, known as sulforaphane.

Citrus Fruits. Several epidemiological studies have shown that citrus fruits are protective against a variety of human cancers. Although oranges, lemons, limes, and grapefruits are a principal source of such important nutrients as vitamin C, folate, and fiber, Elegbede *et a*l. (1993) have suggested that another component, phytochemical, is responsible for the anticancer activity. Citrus fruits are particularly high in a class of phytochemicals known as the limonoids.

Tea. Tea is second only to water as the most widely consumed beverage in the world. A great deal of attention has been directed to the polyphenolic constituents of tea, particularly green tea. Polyphenols comprise up to 30% of the total dry weight of fresh tea leaves. Catechins are the predominant and most significant of all tea polyphenols. The four major green tea catechins are epigallocatechin - 3 - gallate, epigallocatechin, epicatechin-3-gallate, and epicatechin. There is some evidence that tea consumption may also reduce the risk of CVD.

Wine and Grapes. There is growing evidence that wine, particularly red wine, can reduce the risk of CVD. The high phenolic content of red wine, which is about 20-50 times higher than white wine, is due to the incorporation of the grape skins into the fermenting grape juice during production. Frankel and coworkers (1993) attributed the positive benefits of red wine to the ability of phenolic substances to prevent the oxidation of LDL, a critical event in the process of atherogenesis. Red wine is also a significant source of trans-resveratrol, a phytoalexin found in grape skins. Resveratrol has also been shown to have estrogenic properties which may explain in part the cardiovascular benefits of wine drinking, and it has been shown to inhibit carcinogenesis *in vivo*.

(To be continued)

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Guidelines for management of malaria

- Prevention is better than cure in control of malaria.
- There is no magic bullet to combat malaria. Keep away from mosquitoes.
- Falciparum malaria must not be treated with single drug.
- Chemoprophylaxis is no longer recommended for long -term travellers who visited malaria endemic areas for more than three months.

Highlights on Useful Research Findings Applicable to Health

Snakebite (by Dr. Tun Pe)

Effect of recent feeding on venom antigenaemia and severity of envenoming in Russell's viper (*Daboia russelii siamensis*) bite

There is a widespread belief that snakes are less harmful after they have eaten and that bites sustained in the morning, after the snake's nocturnal hunting and feeding, will be less deadly than those in the evening or at night.

In order to confirm the assumption and belief, we conducted an experiment on 155 (33%) dead snakes brought by 413 patients with proven or suspected Russell's viper bites admitted to Tharawaddy hospital during 5 rice harvesting seasons in 1984-1988 [1]. The stomach was opened through ventral incision to see if the snake had fed recently. In the patients, severity of envenoming was graded clinically as none, local or systemic. Twenty minute clotting test and quantitation of venom antigen by EIA were also done.

Effects of recent feeding on severity of envenoming

Sixty seven of the snakes brought had empty stomachs. The stomachs of 34 snakes contained recently ingested pray: rodents (29), frogs (3), geekoes (1) or birds (1). The snakes having eaten recently had **no effect on the development of local swelling** in the patients whom they bit (Mann-Whitney U test, z = 0.3194, P=0.3745); **on the degree of local envenoming** reflected by **the percentage circumference increase of bitten limbs** compared with the control limb (t =0.56, $0.4<P<0.5$); or, in the patients who developed systemic envenoming, on the patients' **mean initial serum venom concentrations** (61.90±26.11 ng/ml) ($t=0.69$, $0.4<P<0.5$) [1].

Twelve patients bitten by snakes whose stomachs contained prey and 22 bitten by snakes with empty stomachs developed systemic envenoming. Bites by 67 snakes: 45 with empty stomachs and 22 whose stomachs contained prey, caused no envenoming. Using the continuity corrected Yates's χ^2 d test, **no correlation** was found between the presence or absence of prey in the snakes' stomach and **the degree of envenoming** ($P>0.9$).

Our observations indicate that the extent of local swelling, percentage circumference increase of the bitten limb, degree of envenoming, and admission venom level of systemic cases were **not influenced by whether the snake had eaten recently**. We have carried out other studies [2] which support the view that the amount of venom (40-230 mg) left in the glands of a large Russell's viper after 4 successive hunting bites would still be sufficient to cause systemic envenoming if the snake then bit a human.

Summary

The presence of prey, usually a rodent, in the snake's stomach, indicating that it had eaten recently, did not influence the severity of envenoming, the initial venom level, the percentage circumference increase and the extent of local swelling in the bitten limb.

Reference:

1. Tun Pe, Ba Aye, Aye Aye Myint, Tin Nu Swe & Warrell, DA.Trans. Roy. Soc. Trop. Med. & Hyg. 1991; 85:804-808.
2. Tun Pe, Khin Aung Cho and Aye Aye Myint. The Snake 1991; 23:71-74.

Tuberculosis (by Dr. Wah Wah Aung)

Preservation of Sputum Specimens with B.P. Phenyl for Acid-Fast Bacilli (AFB) smears examination and culture

Putrefaction of sputum specimens usually occurs within 8-10 hours in tropical climate if they are kept without preservatives, thus it makes inconvenience for sending specimens from remote areas to the central laboratory. The aim of this study was to find out whether locally available B.P Phenyl, manufactured by Paint Factory, Taketa Township, Myanmar can be used as a preservative for sputum specimens without affecting Acid Fast Bacilli (AFB) smear examination and culture. Both smear positive and negative sputum specimens were collected from TB Centre, Yangon Division, from May to September 2001. Smear microscopy (Ziehl-Neelsen method) and culture were done on the first day. Then 3 drops of 0.5% B.P. Phenyl were added to each sputum specimen and kept at room temperature. Smear examinations of phenyl-treated sputum were done on the third, fifth and seventh day and cultures of them were done on fifth day and seventh day. Smear examination and culture results of untreated and phenyl-treated specimens were compared. It was found that 0.5% B.P. Phenyl does not interfere with the morphology, viability and growth of tubercle bacilli, thus this method can be used for pursuing of sputum specimens intended for culture. Three drops of 0.5% B.P. Phenyl should be added to the sputum specimen just prior to or just

after collection of sputum which can not be examined within 8 hours and kept in cool place. The phenyl treated sputum should be sent to the laboratory within four days after collection and processed soon after arrival.

*Stock solution of 5% B.P. Phenyl is prepared by adding 1ml of B. P. Phenyl to 19 ml of distilled water in a stock bottle and kept in cool place. Working solution 0.5% B.P. Phenyl is freshly made up by diluting stock 1:10 in distilled water (1 ml of stock B.P. Phenyl + 9 ml of distilled water).

Reference:

1. Ti Ti, Win Mar Oo, Kaeithi Hpon Naing, Wah Wah Aung, Ahmar Sein, Win Maung & Aye Tun. Presented at *Myanmar Health Research Congress 2001 Programmes and Abstracts* , 2002; p. 1.

Highlights on WHO/SEARO guidelines for the clinical management of snakebites in the Southeast Asian region (by Prof. DA Warrell)

Antivenom therapy (snakebite)
Antivenom must never be given by the intramuscular route if it could be given intravenously.

Antivenom therapy (snakebite)
Antivenom should be given by the intravenous route whenever possible.

Antivenom therapy (snakebite)
Epinephrine (adrenaline) should always be drawn up in readiness before antivenom is administered.

Antivenom therapy (snakebite)
Patients' must be closely observed *for at least one hour* after starting intravenous antivenom administration, so that early anaphylactic antivenom reactions can be detected and treated early with epinephrine (adrenaline).

Antivenom therapy (snakebite)
Antivenom should never be injected into the gluteal region (upper outer quadrant of the buttock) as absorption is exceptionally slow and unreliable and there is always the danger of sciatic nerve damage when the injection is given by an inexperienced operator.

Antivenom dose (snakebite)
Snakes inject the same dose of venom into children and adults. Children must therefore be given exactly the same dose of antivenom as adults.

Criteria for repeating the initial dose of antivenom (snakebite)
Criteria for giving more antivenom

- Persistence or recurrence of blood incoagulability after 6 hr
- Persistence or recurrence of bleeding after 1-2 hr
- Deteriorating neurotoxic or cardiovascular signs after 1-2 hr

News Related to Medical Research Activities in Myanmar

Research Grants to DMR (LM)

No	Title	Division	Principal Investigator	Funding Agency	Duration
1.	Therapeutic efficacy of 4 artemisinin based combination therapies (ACTS) on uncomplicated falciparum malaria	Parasitology Research Division	Dr. Ye Htut Director (Admin)	WHO /APW	2006-2007
2.	Workshop on Drug Resistant Malaria	Parasitology Research Division	Dr. Ye Htut Director (Admin)	WHO /APW	2006-2007
3.	An exploratory study in willingness to change smoking practice of urban adolescents a qualitative approach	Health Systems Research Division	Dr. Le Le Win Research Scientist	WHO/ APW	2007-2009
4.	Factors associating with antenatal care seeking practice of pregnant women with hypertensive disorders	Medical Statistics Research Division	Dr. kyaw Oo Research Scientist / Head	WHO /APW	2006-2007

5.	Estimation of disease burden due to Tuberculosis of township level,Yangon	Medical Statistics Research Division	Dr. Myo Myo Mon Research Officer	WHO /APW	2006-2007
6.	Bladder carcinogenesis : Early Diagnosis, Molecular Immunochemistry and Molecular Genetics aspects	Pathology Research Division	Dr. Sann Sanda Khin Research Officer	Monbusho/ Japan	2005-2009

DMR (LM) Scientists Attending Regional or International Congress / Meeting/ Seminar, etc.

No	Name & Designation	Name of International congress /Meeting / Seminar, etc.	Place	Funding Agency	Duration
1.	Dr. San Hla Mu Deputy Director / Head Health Systems Research Division	38th Asia Pacific Academic Consortium for Public Health Conference	Thailand	Public Health Consortium Mahidol University	3-12-06 to 8-12-06
2.	Dr. May Aye Than Deputy Director / Head Daw Mu Mu Sein Myint Research Scientist Pharmacology Research Division	The seventh Traditional Medicine Practitioner Conference	Yangon	Department of Traditional Medicine	24-11-06 to 26-11-06

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1/ Lecture Guide on Research Methodology
2/ Guidelines on Poison Prevention, Control and Management
3/ Malaria Research Findings Reference Book, Myanmar (1990-2000)
4/ Dengue Research Findings Reference Book, Myanmar (1980-2002)
5/ A Guide to Management of Snakebite by Snakebite Research Group, Department of Medical Research (Lower Myanmar)
6/ Guideline for Submission of Application to Ethical Review Committee , Department of Medical Research (Lower Myanmar) October, 2006
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