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Connections

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We say goodbye to Suhanya Bhuvanendran

Suhanya Bhuvanendran

We want to thank Suhanya Bhuvanendran for her many years of hard work at CMPT, her dedication and loyalty.

During all this time, Suhanya wore many hats: web manager, water microbiology expert, laboratory safety officer, administrative extraordinaire, overall technical support, all of them with excellent competency and responsibility.

Other less official roles were: Diwali Fest snacks provider, seasonal lab decorator (responsibility shared with Esther Kwok), emotional support, listening ear, reliable good friend.

Although we are sad to see her go, we want to wish Suhanya all the best in her new job; we know that she will continue to grow in her professional life and we wish she reaches all her goals.

Thank you Suhanya for your kindness, your loyalty, and your friendship.

I want to bid farewell to CMPT staff and the committee members.

I have enjoyed working for CMPT for more than 10 years. During these years I was able to learn and excel in my work only because of the support, guidance and encouragement I received from all of CMPT staff. CMPT has made a huge difference in my personal and professional life and has groomed me for the 'outside' world better than years of schooling has. :)

I remember being in awe of the amount of knowledge being exchanged at my first committee meeting. And in October 2015 committee meeting, I remember being in as much awe as I was in 2005. I will certainly miss these meetings, the dinners and the great company that gave me memories to last a lifetime!

I can only wish that my new workplace will give such rewarding experiences and supportive colleagues!

I sincerely wish CMPT, its staff and the committee members success in all its future endeavors.
Thank you for everything!

Suhanya

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Human Pathogens and Toxins Act

The goal of the Human Pathogens and Toxins Act (HPTA) is "*to establish a safety and security regime to protect the health and safety of the public against the risks posed by human pathogens and toxins*"

The HPTA, together with the Human Pathogens and Toxins Regulations (HPTR) and the Canadian Biosafety Standards are now the main components of a safety program created by the Public Health Agency of Canada (PHAC) to address safety issues related to accidental or deliberate release of toxins and/or pathogens.

Although the HPTA was ratified by the Parliament of Canada in 2009, it came into full force on December1, 2015. This means that any organization or individual conducting specified activities with human pathogens and toxins including: possessing, handling, using, producing, storing, permitting any person access, transferring, importing, exporting, releasing, abandoning, or disposing of a human pathogen or toxin need to apply for a licence under the (HPTA).

During the last few months, CMPT has been reminding participant laboratories to apply for their HPTA licence, as failure to do so would prevent CMPT from sending the Proficiency Testing surveys.

Under the HPTR section 2 Licences point 4 Conditions of licences:

> **"(c)** a person who intends to transfer a human pathogen or toxin must, before the transfer, take reasonable care to be satisfied of the following:
>
> **(i)** that the intended recipient is exempt from the requirement to hold a licence, or
>
> **(ii)** that the intended recipient will conduct controlled activities in relation to that human pathogen or toxin in a facility that is set out in a licence that authorizes those controlled activities with respect to that human pathogen or toxin;"

What does it all mean?

Your lab needs to have a licence, under the HPTA, to be able to work with Risk 2 or higher organisms, as well as, to receive, and to transfer these organisms from and to other laboratories.

In addition to the licence, your lab will have to adhere to a series of regulations and controls outlined in the above mentioned documents.

...

As we go through these regulations in the next few issues of CMPT's Newsletter, we will talk about how these regulations will impact the daily lives of Canadian microbiology labs.

"This Act does not apply to

(a) a human pathogen or toxin that is in an environment in which it naturally occurs if it has not been cultivated or intentionally collected or extracted, including a human pathogen or toxin that

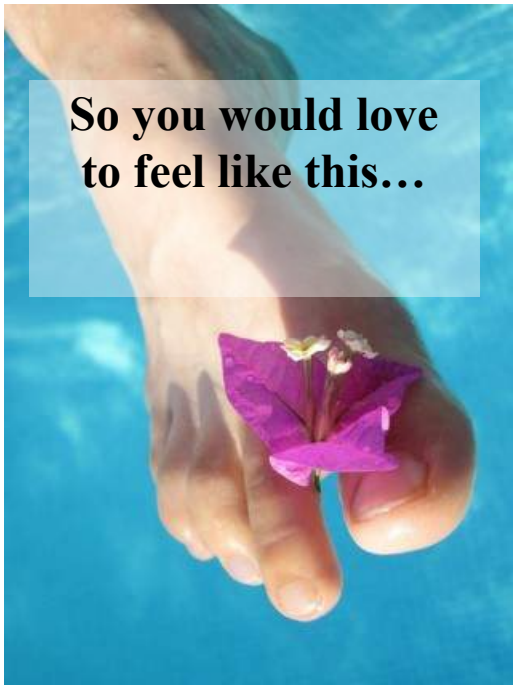
(i) is in or on a human suffering from a disease caused by that human pathogen or toxin,

(ii) has been expelled by a human suffering from a disease caused by that human pathogen or toxin, or

(iii) is in or on a cadaver, a body part or other human remains; or

(b) a drug in dosage form whose sale is permitted or otherwise authorized under the *Food and Drugs Act* or a human pathogen or toxin contained in such a drug."

Toe Nail Onychomycosis



You are not alone …

Onychomycosis affects over 35 million people in the United States alone;[1] the disease has a prevalence of approximately 3% of the adult population in North America and Europe.[2]

Dermatophytes are the most frequently implicated causative agents in onychomycosis (nearly 90% in toe nail and at least 50% in fingernail infections); the most common being *Trichophyton rubrum*, *Trichophyton mentagrophytes,* and *Epidermophyton floccosum* although variation exists worldwide.[3,4]

A healthy nail is not usually susceptible to fungal infection; predisposing factors include age, circulatory disorders affecting the lower extremities, metabolic disorders such as diabetes mellitus, and immunosuppressive conditions.[2,5]

DIAGNOSIS

Laboratory confirmation of onychomycosis should be obtained before starting treatment and both for direct microscopy and in vitro laboratory culture should be performed.[3]

Direct microscopy is the first screening tool used to identify fungal structures as identification of dermatophytes requires approximately 2–6 weeks.

KOH and Calcofluor white are the two most common techniques for direct examination. Calcofluor white binds to cellulose and chitin and fluoresces when exposed to ultraviolet radiation increasing sensitivity but the need of a fluorescent microscope limits its use.[4]

TREATMENT

Although many people think than onychomycosis is only a cosmetic problem, the infection can cause problems beyond the esthetic appearance.

Infected nails may serve as a reservoir of fungi with a potential for spread to the feet, hands and groin.[2] Further complications can occur also in diabetic and immunocompromised patients.[1]

Direct examination with KOH and Chicago Sky Blue stain under magnification of 400X.

Is there hope?

Current approaches to treatment include systemic therapy, mechanical/surgical, topical therapy, or a combination of these.[1]

Systemic therapy

The main systemic drugs approved and used for the treatment of onychomycosis are terbinafine, itraconazole, and griseofulvin.[2] Terbinafine is considered the gold standard with cure rates of >70%.[6]

Medical debridement

Debridement reduces the thickness of the nail and decreases the fungal load but does not address the fungus itself.[1]

Topical treatment

Topical treatments have a low success rate as the structure of the nail acts as a barrier for drug diffusion.[2] Cure and success rates have been between 8.5% and 18% after 48 weeks treatment.[7]

When evaluating treatment success it is important to understand the definitions of treatment success.

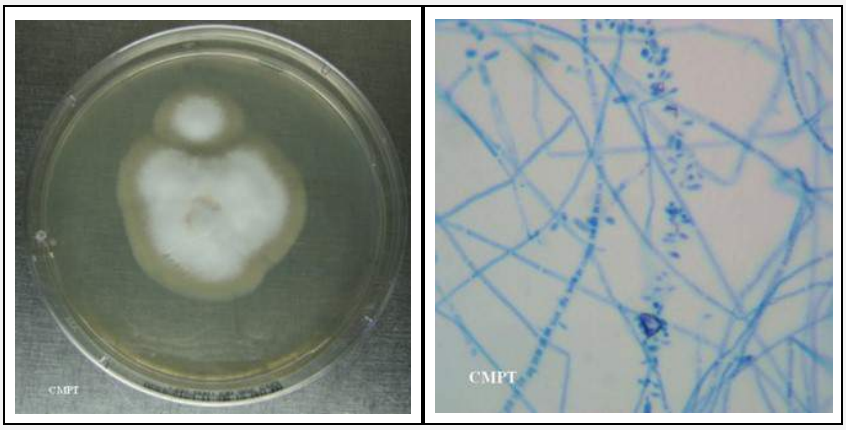
Mycologic cure *means negative KOH examination and culture while* ***Complete cure*** *means 0% clinical involvement of the target toenail in addition to a negative KOH examination and fungal culture.*[1]

Unfortunately, 100% success on these definitions is rarely achieved.

THE FUNGI

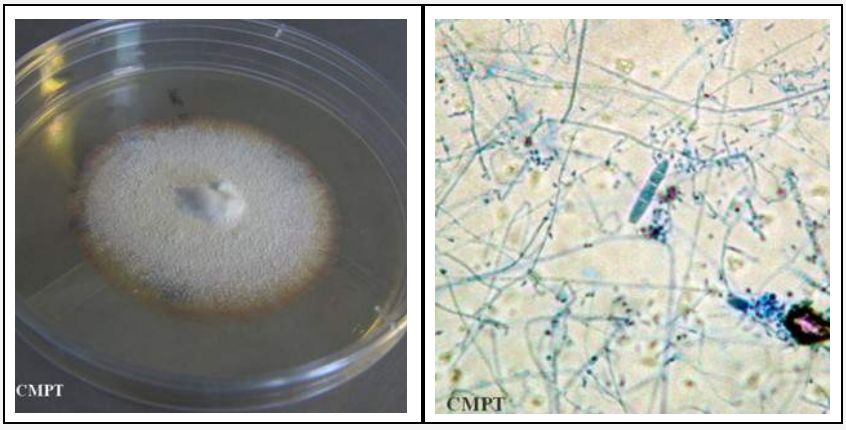
Members of the genus *Trichophyton* possess several virulence factors including acid proteinases, elastase, keratinases and other proteinases that allow them to invade the keratinous tissues of humans and animals. [8]

T. rubrum is an anthropophilic dermatophyte, as it almost exclusively infects humans. Infections are more common in adults and men than in children and women. [9]



T. rubrum colony on Saboureaud agar (left), and microscopic characteristics (right): Lacto-phenol cotton blue stain under magnification of 400X

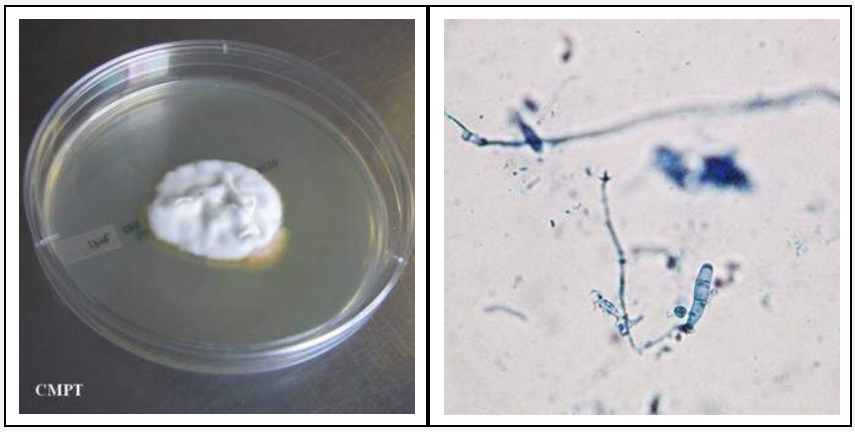
Trichophyton mentagrophytes is an anthropophilic fungus distributed worldwide and a common cause of tinea pedis, and sometimes superficial nail plate invasion. [10]



T. mentagrophytes colony on Saboureaud agar (left), and microscopic characteristics (right): Lacto-phenol cotton blue stain under magnification of 400X

For thorough descriptions of each fungus please check CMPT's Mycology critiques

Humans are the primary host of *Epidermophyton floccosum*, the only species of the genus known to be pathogenic. [10] *E. floccosum* infections usually occur on the skin of the torso, limbs, soles of feet or palms of hands and nails. [11]



E. floccosum colony on Saboureaud agar (left), and microscopic characteristics (right): Lacto-phenol cotton blue stain under magnification of 400X

Veronica Restelli
CMPT Editor

Photo credits: CMPT

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News

Welcome Doris Poole to the Clinical Microbiology experts Committee!

Ms. Doris Poole from the Diagnostic Microbiology Laboratory, Queen Elizabeth Hospital, Charlottetown, PEI has joined CMPT's Clinical Microbiology experts Committee.

Ms. Poole brings an extensive knowledge in laboratory microbiology as well as experience in veterinary EQA programs.

Ms. Poole joins the committee with the desire to encounter stimulating challenges and looks forward to bringing new ideas and learning from other experts in the field.

Welcome Doris!

Clostridium difficile program
- NOTICE -

Starting may 2016, the results for the *C. difficile* program will be reported separately from the Clinical Bacteriology program.

The results will be posted online and result letters will be available to each laboratory within two weeks of the due day.

Upcoming Events

February 2016

Quality Forum

February 24 - 26, 2016 Vancouver
More info: http://qualityforum.ca/

April 2016

CACMID – AMMI Canada 2016 Annual Conference

March 30 – April 2, 2016 Vancouver, British Columbia
More info: http://www.cacmid.ca/2015/05/vancouver2016/

26th European Congress of Clinical Microbiology and Infectious Diseases

April 9 - 12, 2016. Istanbul, Turkey
More info: http://www.eccmid.org

International Forum on Quality and Safety in Healthcare

April 12 - 15, 2016 Gothenburg, Sweden
More info: http://internationalforum.bmj.com/

June 2016

66th Annual Conference of the Canadian Society of Microbiology

June 12 - 15, 2016 Toronto, ON
More info: http://www.csm-scm.org/

LABCON 2016

June 16 - 19, 2016 Charlottetown, Prince Edward Island
More info: http://labcon.csmls.org/en/

July 2016

91st Annual Meeting of the American Society of Parasitologists

July 11 - 14, 2016 Edmonton, Alberta
More info: http://amsocparasit.org/

ABOUT CONNECTIONS

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Editor: Veronica Restelli

Contact Connections

By mail
Room G408, 2211 Wesbrook Mall,
Vancouver, BC V6T 2B5
Canada

By phone: 604– 827-1754
By fax: 604-827-1338
By email: restelli@mail.ubc.ca

Connections is available online:
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ISO 9001:2008

ISO/IEC 17043:2010

PROFESSIONAL DEVELOPMENT COURSE

http://pd.cmpt.ca/

More than 120 participants have signed up so we are very excited about that.

Recently released:

- **Bacteriology Module 2**

Coming soon:

- **Mycology Module 2**

Registration is still open: http://pd.cmpt.ca .

Innovation, Education, Quality Assessment, Continual Improvement