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Editorial

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Did You Know? - Milk being widely consumed food, its safety is of prime concern to consumers. More so because it is highly perishable and prone to action of enzymes and micro organisms inherently present in it. Scientists at Indian Institute of Technology, Guwahati, have developed a simple paper kit that can test freshness of milk and tell how well it has been pasteurized.

Best Practices - Adolescence and the early years of adulthood are a time of life when many changes occur, for example changing schools, leaving home, and starting university or a new job. For many, these are exciting times. They can also be times of stress and apprehension, however in some cases, if not recognized and managed, these feelings can lead to mental illness. Many adolescents are also living in areas affected by humanitarian emergencies such as conflicts, natural disasters, and epidemics. Young people living in situations such as these are particularly vulnerable to mental distress and illness.

Automated staining machine for biological samples (Issue II)

Staining of tissues sections using chemical and biological dyes has been used for over a century for visualizing various tissue types and morphologic changes associated with contemporary cancer diagnosis. The staining procedure however is labor intensive, needs trained technicians, costly, and often results in loss of irreplaceable specimen and delays diagnoses.

Introduction

Microxpress® New Modular design Slide Staining machine AutoKrom™ is an automatic dyeing machine used for Microbiology, Haematology or Histology. This model greatly enhances the histological and pathological histology specimens stained with technology and automation level. The International Integrated design, Simple structure, reliable operation, processing precision, not only improving the staining effect but also makes the operation easy.

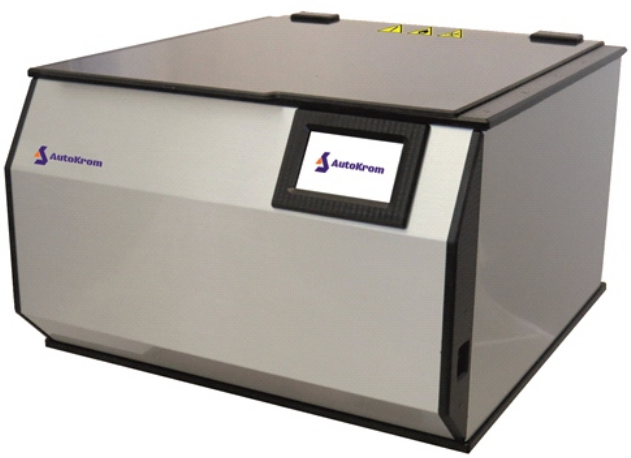


Fig 1: Autokrom™ Automated slide stainer

Automatic Slide Stainer is essential in doing the pathological research, this instrument is designed for saving the fussy process of manual tissue staining. Automated Slide strainers devices automate the staining of peripheral blood and other hematologic smears. The operator inserts slides into a carrier and selects a time or programmed procedure.

There are several advantages of such a machine. One can extrapolate from the time saved in our laboratory to other workloads, but in a year we would save at least 128 hr of a technologist's time. Since each slide is stained in a uniform manner, there is much greater consistency in the appearance of bacteria. In contrast, hand staining of batches of slides leads to unequal exposure to stains and inconsistent staining. To enhance uniformity of staining, especially decolorization, with the machine, thin smears should be made. Manually stained slides often have residual crystals of stain on both sides which require removal before reading. The machine consistently produces clean, uniformly stained, dry, and ready to read slides. Also, the availability of such a machine encourages the laboratory and the house staff to perform direct Gram stains on all appropriate specimens for bacterial culture.

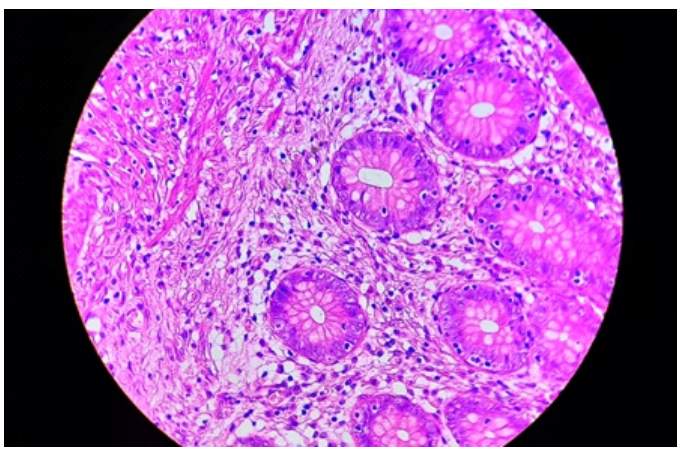


Fig 2: Slide stained with AutoKrom™ (H &E)

Principles of Operation

Microprocessor controls have been used in many stainers and in built-in fume systems. Models are available to accommodate low- or high-volume requirements. A rotating system uses a transport arm to which the basket of slides is attached. The arm moves the basket in and out of the solution containers, which have been placed on the instrument in a specified order. Staining times can be preprogrammed or set on a timer clock. Some linear systems transport individual slides through each solution container, whereas others transport baskets of slides. Continuous-conveyor stainers cannot be programmed, but some have programs for different staining times. Others have a predetermined timing sequence; the stain sequence is adjusted by adding more than one container of stain or reagent for longer immersion times. Several instruments incorporate programmable microprocessor controls, which allow multiple staining programs to be selected and stored in memory. A battery backup is usually available to retain memory function if power is disrupted.

Purchasing Considerations

Some units require water and drain lines, so accessibility to plumbing is necessary. Linear stainers may allow the user to continuously add slides, whereas other stainers must first complete the entire staining sequence like Autokrom™. You may need the flexibility of multiple staining programs. Power backup is another feature available to the buyer.

FEATURES OF AutoKrom™ :

1. Fully automated slide Stainer
2. LOAD & WALKAWAY
3. Designed to fit in all Lab setups
4. 12 stations to meet all staining requirement
5. Ideal for routine microbiological and haematological staining techniques
6. Can be customized for Cytological and Histological staining techniques

Advantages of using Automated Slide Stainer

1. The major advantage of autostainers is that they are time saving, imagine doing a lengthy manual staining procedure, which may takes about 25 minutes to complete.
2. High Input: can stain many slides at the same time.
3. Fully automated; Insert slide and walk away.
4. stainers have built-in fume hoods or can be operated under a hood, which eliminates some chemical exposure.
5. The built-in fume hoods available with many stainers eliminate the need for larger overhead hoods.
6. Stainers offer an advantage in consistency of technique by eliminating personal variation; they also maintain a consistent temperature for temperature-sensitive procedures.
7. They can save space and money.
8. And they are easy to use.
9. Equipment that applies stain does so more conservatively, reducing reagent consumption, wastage of stains and contamination of stains.
10. Multiple use.
11. Consistency for all sample types.

Future Development

Slide strainers are witnessing striking technological improvements from the growing trend of laboratory processes automation. They are popularly employed in laboratory for quality histology staining results. New models employing microwave technology in both the staining and specimen drying functions of slide-stainer operation are being introduced. Additional features, such as programming flexibility, and printer ports for documentation, are becoming more popular. Advancements in computerized controls promise to continue into the future.

Automated staining machine finds application in disease diagnosis and oncology research. The growing health burden of infectious diseases is a key factor catalyzing the demands in the slide stainers market, especially in developed countries. In developing world, the prevalence of infectious diseases has spurred spending of the population on regular health checkups, which has motivated healthcare providers such as hospitals to automate lab processes.

A Good Time to "Revamp" Sales & Marketing

COVID-19 has done a lot of bad things to our world, but it has also revealed opportunities for efficiency and value in the healthcare chain, with virtual health being a prime example.

Looking through the pharma lens, this seismic shift has, in a few months, collapsed something that took decades to develop: the in-person selling model. A change of this significance offers an opportunity to adapt, but this must be achieved via a strategic rethink, not just the addition of tactical solutions.

REVAMP (Remote Engagement through Value Added Marketing for Payers/Professionals/Patients) is an approach that advocates for a revised view of pharma marketing within a remote engagement framework.

REVAMP with a service platform

It's important to make the distinction between the service itself and being able to access it in a seamless, on-demand manner. For example, it's great to have a brand-enabled at-home visit from a nurse for administration and monitoring, but it's another thing for a chatbot to suggest it and schedule it in real time.

Platforms, different from one-off services, are data- and content-driven, where contributors and consumers create value through participation. These platforms are powered by data and value is created by enabling an exchange between creator and customer.

The systems at the core of a REVAMP effort require a transition to being "always on"—they use behavioral data, integrate cross-channel access, and engage dynamically to allow interdepartmental connections between sales and patient support.

The idea of an always-on platform operates on two levels—access and value creation. It can be compared to an app store, but instead of offering apps selected by the customer, the pharma store would include all customer interactions. The key enhancement is that the apps would share data and allow real-time remote access to features across the apps or touchpoints. These touchpoints would include salesforce details, personalized emails, virtual booths, speaker meetings, and other functional goal-oriented interactions, which are digital, trackable, and support a shared master data set about the customer.

2. REVAMP with new value drivers

The relationship-based sell is a function that has outlived its usefulness. Relationships are important, but creating real-world value will always win over small talk, especially at a time of crisis. Clinical relevance and depth is what customers value. Pharma represetatives are being forced to take a hard stare at how to deliver on this, especially with high-decile prescribers who might already be familiar with the data and talking points on the product profile. What's wanted now is real-world evidence, best practices on telemedicine, innovative ways of providing remote care and monitoring, and of course, outcomes. Pharma must rebalance the reprentative-to-medical-science-liaison staffing ratios and adapt marketing plans to be content rather than message-centric.

In other words, clinical content needs to go beyond top-line messages and data that can be gleaned from a cursory read of the product profile. It's more imperative that real-world opinions, evidence, and patient experience come alive in a way that is clinically relevant and meaningful. The shift from selling to listening, sharing, and supporting is not an easy one, but that is what the customer demands in the post-COVID world.

3. REVAMP by shifting hours

"Patients first" is a mantra that is etched on the walls of big pharma. The most profound shifts in engagement will take place only if we truly embrace that idea. The first consideration is that pharma does NOT engage with physicians during work hours. There are too few doctors, too many patients, and too little time to sufficiently care for them. With the always-on world of remote engagement, unfettered by geographical and physical constraints, reprentatives must now engage before or after hours and connect with physicians when they're involved in research, CME, or other non-clinic times.

It's both a matter of pragmatism and principle that pharma plays a supportive role to the healthcare professional's daily schedule, rather than a disruptive one.

https://www.pharmexec.com/

Oswald Avery

Oswald Avery born October 21, 1877, Halifax, Nova Scotia, Canada—died February 20, 1955, Nashville, Tennessee, U.S. Canadian-born American bacteriologist whose research helped ascertain that DNA is the substance responsible for heredity, thus laying the foundation for the new science of molecular genetics. His work also contributed to the understanding of the chemistry of immunological processes.

Avery received a medical degree from Columbia University College of Physicians and Surgeons in New York City in 1904. After a few years in clinical practice, he joined the Hoagland Laboratory in Brooklyn and turned his attention to bacteriological research. In 1913 he joined the staff of the Rockefeller Institute Hospital in New York City, where he began studying the bacterium responsible for lobar pneumonia, Streptococcus pneumoniae, called the pneumococcus. Avery and colleagues isolated a substance in the blood and urine of infected persons that was produced by this bacterium. They identified the substance as a complex carbohydrate called a polysaccharide, which makes up the capsular envelope of the pneumococcus. Based on the recognition that the polysaccharide composition of capsular envelopes can vary, Avery helped classify pneumococci into different types. Avery also found that the polysaccharide could stimulate an immune response—specifically, the production of antibodies—and was the first to demonstrate that a substance other than a protein could do so. The evidence that the polysaccharide composition of a bacterium influences its virulence (ability to cause disease) and its immunological specificity showed that these characteristics can be analyzed biochemically, thus contributing to the development of immunochemistry.

In 1932 Avery turned his attention to an experiment carried out by a British microbiologist named Frederick Griffith. Griffith worked with two strains of S. pneumoniae—one encircled by a polysaccharide capsule that was virulent, and another that lacked a capsule and was nonvirulent. Griffith's results showed that the virulent strain could somehow convert, or transform, the nonvirulent strain into an agent of disease. Furthermore, the transformation was heritable—i.e., able to be passed on to succeeding generations of bacteria. Avery, along with many other scientists, set out to determine the chemical nature of the substance that allowed transformation to occur. In 1944 he and his colleagues Maclyn McCarty and Colin MacLeod reported that the transforming substance—the genetic material of the cell—was DNA. This result was met initially with skepticism, as many scientists believed that proteins would prove to be the repository of hereditary information. Eventually, however, the role of DNA was proved, and Avery's contribution to genetics was recognized.

Jokes

Fred is 32 years old and he is still single.
One day a friend asked, "Why aren't you married? Can't you find a woman who will be a good wife?"
Fred replied, "Actually, I've found many women that I have wanted to marry, but when I bring them home to meet my parents, my mother doesn't like them."
His friend thinks for a moment and says, "I've got the perfect solution, just find a girl who's just like your mother."
A few months later they meet again and his friend says, "Did you find the perfect girl? Did your mother like her?"
With a frown on his face, Fred answers, "Yes, I found the perfect girl. She was just like my mother. You were right, my mother liked her very much."
The friend said, "Then what's the problem?"
Fred replied, "My father doesn't like her."

Student: "Would you punish me for something I didn't do?"
Teacher: " Of course not."
Student: "Good, because I haven't done my homework."

An elementary school teacher sends this note to all parents on the first day of school.
"If you promise not to believe everything your child says happens at school, I will promise not to believe everything your child says happens at home.

A man was complaining to a railroad engineer. What's the use of having a train schedule if the trains are always late.
The railroad engineer replied.
How would we know they were late, if we didn't have a schedule?

A guy says to his friend, "Guess how many coins I have in my pocket."
The friend says, "If I guess right, will you give me one of them?"
The first guy says, "If you guess right, I'll give you both of them."

A man walks into a shop and sees a cute little dog.
He asks the shopkeeper, "Does your dog bite?"
The shopkeeper says, "No, my dog does not bite."
The man tries to pet the dog and the dog bites him.
"Ouch," he says, "I thought you said your dog does not bite!"
The shopkeeper replies, "That is not my dog."

A teenage girl had been talking on the phone for about half an hour, and then she hung up.
"Wow!" said her father, "That was short. You usually talk for two hours. What happened?"
"Wrong number," replied the girl.

The teacher says: Today, we're going to talk about the tenses. Now, if I say "I am beautiful," which tense is it?
The student says: Obviously it's the past tense.

The doctor to the patient: "You are very sick."
The patient to the doctor: "Can I get a second opinion?"
The doctor again: "Yes, you are very ugly too."

Cryptosporidium Infection

Cryptosporidiosis is a worldwide infection caused by the protozoan *Cryptosporidium*, a parasite that infects many species of vertebrates, including humans, causing acute gastroenteritis, abdominal pain, and diarrhea. Cryptosporidiosis is transmitted primarily through the fecal–oral route, i.e., by ingesting viable oocysts of animal and/or human origin, emitted with feces that contaminated food or water. Although the waterborne transmission of infectious pathogen is well documented, neither the natural reservoir nor the exact infection route of cryptosporidia is well-known.

Cryptosporidium was first discovered by Tyzzer in 1907, but for a longtime, it was thought to be a non-pathogenic parasite. Only since 1976, it was recognized as an opportunistic pathogenic parasite, when 2 human cases of cryptosporidiosis were reported to be associated with diarrhea. However, *Cryptosporidium* remained unknown as a significant human pathogen of acute diarrhea disease until 1982, when it was recognized as a causative agent of self-limiting diarrhea for the general population and a life-threatening disease for immunocompromised persons such as those receiving immunosuppressive agents and acquired immunodeficiency syndrome (AIDS) patients.

The parasite completes its life cycle within a single host (monoxen cycle), alternating asexual and sexual reproduction. Although more than 30 species have been included in the genus *Cryptosporidium*, only 2 species, namely, *Cryptosporidium parvum* and *Cryptosporidium hominis*, commonly infect humans. *C. parvum* is responsible for most cattle infections, and consequently, it is considered to be responsible for most zoonotic infections in humans. *Cryptosporidium* spp. exhibit little host specificity, and different members of this genus have been reported to infect multiple hosts, such as mammals, marsupials, birds, reptiles, and fish. The intracellular protozoan parasite *Cryptosporidium* is a human and veterinary pathogen – a member of the phylum *Apicomplexa* that include other pathogens such as *Plasmodium* spp., *Eimeria* spp., *Neospora*, *Babesia*, and *Theileria*. However, in contrast to other parasitic protozoa of this phylum, such as *Toxoplasma gondii* or *Plasmodium falciparum*, the species of the genus *Cryptosporidium* cannot be cultivated in vitro. Since there is no vaccine commercially available to prevent *Cryptosporidium* infection, and these parasites have certain characteristics that make them highly contagious (i.e., survival in the environment for a long time and resistance to chlorine-based disinfectants), the only way to avoid the spreading of the parasite to other people is the introduction of preventive measures to control the transmission of the germs that are shed in feces. These precautions are especially important for people with weakened immune systems.

Pathogenesis

In immunocompetent persons, *Cryptosporidium* infection usually produces a bout of watery diarrhea, although the infection in some persons may not lead to the symptoms. The disease is likely underestimated, since the diarrhea usually resolves without any treatment. Although even people who do not have direct contact with animals may be infected, those who have direct contact with infected animals (particularly calves) or swallow pool water or drink untreated water are at a higher risk of contracting cryptosporidiosis. *Cryptosporidium* infections are also more common in individuals who are in poor health or who have weakened immune systems (e.g., human immunodeficiency virus (HIV)/ AIDS, cancer, and transplant patients). Between the parasites that caused about 1 million deaths every year, cryptosporidiosis resulted in over 50,000 deaths. Moreover, *Cryptosporidium* is one of the most important protozoan pathogen that cause waterborne outbreaks worldwide. *Cryptosporidium* lives in the intestines of the infected individuals and animals in the form of oocysts, which will be released in the feces. After infection, the parasite alters the function of the intestinal barrier, increasing its permeability, absorption, and secretion of fluid and electrolytes, and thereby, the severity, persistence, and outcome of the infection depend on the degree of the immunocompromised status. The oocysts are very resistant to chlorine, chloramines, and chlorine dioxide, which are commonly used in methods of water system disinfection, and remain vital for infection in the environment for a long time. Humans become infected with *Cryptosporidium* by touching anything that has come in contact with contaminated feces, although the most common mode of transmission is represented by ingestion of oocysts in contaminated food and water or air.

Recent studies indicate that cryptosporidiosis may be transmitted by inhalation of aerosolized droplets via respiratory secretions or by coughing, in addition to the well-documented fecal–oral transmission. Pulmonary infections also have been reported.

Immunocompromised hosts are more susceptible to infection than people with a healthy immune system, and in the subjects with HIV/AIDS, the parasite often causes a chronic, prolonged form of a disease, which is difficult to treat and can even result in death. In these patients, fever and malabsorption are common, and the parasite can cause inflammatory disease of the biliary tree leading to biliary tract obstruction, sclerosing cholangitis, papillary stenosis, and pancreatitis. For this reason, cryptosporidiosis is considered one of the riskiest opportunistic infections for patients with acquired immune deficiency syndrome.

Diagnosis

The diagnosis of cryptosporidiosis is usually made by microscopic detection of the parasite oocysts, oocyst antigens, or oocyst DNA in stool samples. Since the most common symptom of cryptosporidiosis is a watery diarrhea, the differential diagnosis for *Cryptosporidium* includes bacterial, viral, and parasitic enteric pathogens associated with acute diarrhea such as rotaviruses, coronaviruses, *Escherichia coli*, and *Salmonella* spp. However, gastrointestinal disorders may also have noninfectious causes, such as inflammatory bowel disease in humans.

Diagnosis of cryptosporidiosis is usually made by microscopically identifying the presence of oocysts of 4 to 6 μm in diameter in the stool of the infected subjects. However, since the detection of *Cryptosporidium* oocysts can be difficult, three fecal samples collected on separate days should be microscopically examined for detection of oocysts prior to exclude a *Cryptosporidium* infection in subjects with severe diarrhea. In addition, for detection of oocysts in stool, sample must be concentrated using the formalin-ether sedimentation method prior to microscopic examination. The oocysts of *Cryptosporidium* can be also observed by acid-fast (modified Ziehl–Neelsen method) or phenol–auramine staining on unconcentrated fecal smears, where the oocysts stain red and bright yellow, respectively. However, much attention should be given to this staining since the oocysts may also appear as "ghost" cells. In addition, although the oocysts of *Cryptosporidium* are half the size of those of *Cyclospora cayetanensis* (about 4–5 μm in diameter vs. 9–10 μm in diameter), another coccidian protozoan parasite that infects the intestine of humans causing acute diarrhea, much attention should be given when evaluating stool samples since the oocysts of both parasites are autofluorescent and acid-fast. In addition, although *C. cayetanensis* has a life cycle similar to *Cryptosporidium*, its oocysts are unsporulated and not infective when shed in the feces, and thereby, direct fecal–oral transmission cannot occur.

Although routine diagnosis of cryptosporidiosis is generally made by the microscopic identification of oocysts in fecal smears, this method, despite being easy to use and low cost, unfortunately has a low sensitivity (≤ 30%). Moreover, accurate diagnosis of cryptosporidiosis using this technique is largely dependent on the experience of the microscopist.

Sensitivity can be improved by performing modified acid-fast stain, a staining generally performed if there are structures suspicious for *Cryptosporidium*, which has been reported to be associated with a sensitivity of 55%. However, these methods cannot distinguish between *Cryptosporidium* species. In addition to the above described methods, watery or mushy stools can be examined for the laboratory diagnosis of cryptosporidiosis using different techniques such as the enzyme-linked immunosorbent assay (ELISA) and immunochromatographic test, which have good sensitivity and specificity for detection of *Cryptosporidium* antigens.

Although the commercial kits have a range of sensitivities and specificities higher than that of the microscopic methods (ranging from 58 to 95%), previous studies have shown that these antigen/antibody-based detection methods are also ineffective if the burden of this parasite in the patients is below the minimum threshold. In addition, these methods are more expensive than polymerase chain reaction (PCR), which is now accepted in most laboratories as the gold standard for the detection of this parasite in the stool. Previous studies have shown that compared to PCR, microscopy, ELISA, and immunochromatographic test (ICT) are less convenient in terms of cost, sensitivity, and specificity and also are more time consuming. Although there have been important advances in diagnostic tools (i.e., the availability of multiplex PCR assays for the detection of intestinal protozoa), the accessibility to this molecular technique is limited in some labs and totally absent in others. In addition, the expense and requirement for technical expertise have limited their use particularly in high-prevalence regions such as developing countries.

Conclusion

Despite the global prevalence and the high impact of cryptosporidiosis, principally in immunocompromised patients, major deficiencies exist in the current control programs, especially in terms of available diagnostic tools. In addition, most common diagnostic tests tend to misdiagnose the disease in endemic areas. In particular, microscopic techniques are the most widely used method for detection of cryptosporidia in stool samples, and the diagnostic accuracy of these methods is largely dependent on the experience of the microscopist.

Since early diagnosis is the best way to fight the infection, there is a need to develop molecular techniques that are sensitive, specific, easy to perform, cost-effective, and high-throughput.

A paper sensor that can detect freshness of milk

Scientists at Indian Institute of Technology, Guwahati, have developed a simple paper kit that can test freshness of milk and tell how well it has been pasteurized. Aided with a smart phone app, the kit can help ensure that milk is consumed before it turns too sour.

Milk being widely consumed food, its safety is of prime concern to consumers. More so because it is highly perishable and prone to action of enzymes and micro organisms inherently present in it. Although pasteurization, freezing and preservation using additives are widely used to prevent spoilage, perishability of milk is still a concern.

There is no easy way to know if milk is fresh or stale or how effective is pasteurization. Tests used in dairies and dairy industries are time consuming and need sophisticated equipment like spectrophotometers. The new detection kit developed at IIT could make testing easy and fast.

A milk enzyme, Alkaline Phosphatase or ALP, is considered an indicator of milk quality because its presence even after pasteurization indicates presence of microbes that may not have been rendered inactive with pasteurization.

Researchers used ordinary filter paper to prepare the detector. The filter paper was cut into small discs using office punch and impregnated with chemical probes that preferentially react with ALP. The 'probes' used are antibodies that specifically bind to ALP. When ALP comes into contact with the probe, it turns white paper disc into a coloured one.

“We soaked paper discs in 4-carboxybenzene diazonium solution and and then chemically treated to expose-COOH groups on the diazonium,” explained says Dr Pranjal Chandra, who led the research effort. “The -COOH groups then attach to NH2 groups on anti-ALP probe molecules. Thus the anti-ALP probes are fixed on paper. When a drop of milk is poured on the tiny paper disc, the ALP in milk reacts with probes, resulting in change of colour.

The colour change on paper discs is then photographed by a smartphone camera and images processed to obtain corresponding colour values. These values are then compared with standard data stored in the phone. Thus not only the presence of ALP could be detected but the amount of it in milk could also be measured.

“We have used samples collected from villages and also milk spiked with specific amount of ALP to test the kit,” said Dr. Chandra. In most cases, almost 94% of the ALP could be detected. The team also confirmed that colour is due only to ALP and not due to interference of vitamins, other proteins and minerals in the milk. The sensor works in both qualitative and quantitative modes. “No separate reader is required for qualitative analysis as it works like just like pregnancy test strips. While colour change shows ALP's presence, the exact amount of ALP is determined using smartphone,” said Dr. Chandra.

The team has prepared a kit by attaching probe discs onto a 2 cm square transparent cellulose acetate film. The probe is then covered with another cellulose acetate film. Colour reaction takes place when milk is injected through a tiny hole in the cover and a smart phone can be used to get the results. It takes just about 15 minutes to detect raw milk from pasteurised one.

The kit could come handy in milk bars, large kitchens and at milk collection centres where freshness of milk is a concern. It can find other applications too. Since ALP is also tested in various body fluids, the kit can also be utilized in clinics. Fabrication in the laboratory at present costs around Rs. 80 to Rs 125 per kit and could come down when mass manufactured, researchers said.

YOUNG PEOPLE AND MENTAL HEALTH IN A CHANGING WORLD

Adolescence and the early years of adulthood are a time of life when many changes occur, for example changing schools, leaving home, and starting university or a new job. For many, these are exciting times. They can also be times of stress and apprehension, however. In some cases, if not recognized and managed, these feelings can lead to mental illness. The expanding use of online technologies, while undoubtedly bringing many benefits, can also bring additional pressures, as connectivity to virtual networks at any time of the day and night grows. Many adolescents are also living in areas affected by humanitarian emergencies such as conflicts, natural disasters, and epidemics. Young people living in situations such as these are particularly vulnerable to mental distress and illness.

Half of all mental illness begins by the age of 14

Half of all mental illness begins by the age of 14, but most cases go undetected and untreated. In terms of the burden of the disease among adolescents, depression is the third leading cause. Suicide is the second leading cause of death among 15-29-year-olds. Harmful use of alcohol and illicit drugs among adolescents is a major issue in many countries and can lead to risky behaviours such as unsafe sex or dangerous driving. Eating disorders are also of concern.

Growing recognition of the importance of building mental resilience

Fortunately, there is a growing recognition of the importance of helping young people build mental resilience, from the earliest ages, in order to cope with the challenges of today's world. Evidence is growing that promoting and protecting adolescent health brings benefits not just to adolescents' health, both in the short- and the long-term, but also to economies and society, with healthy young adults able to make greater contributions to the workforce, their families and communities and society as a whole.

Prevention begins with better understanding

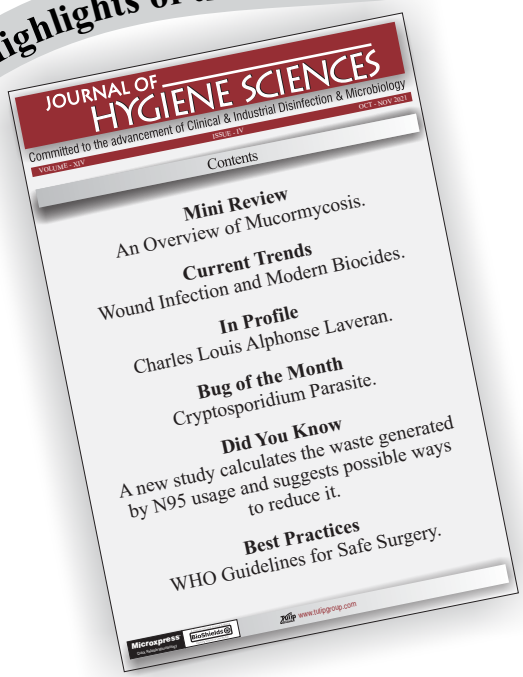
Much can be done to help build mental resilience from an early age to help prevent mental distress and illness among adolescents and young adults, and to manage and recover from mental illness. Prevention begins with being aware of and understanding the early warning signs and symptoms of mental illness. Parents and teachers can help build life skills of children and adolescents to help them cope with everyday challenges at home and at school. Psychosocial support can be provided in schools and other community settings and of course training for health workers to enable them to detect and manage mental health disorders can be put in place, improved or expanded.

Investment by governments and the involvement of the social, health and education sectors in comprehensive, integrated, evidence-based programmes for the mental health of young people is essential. This investment should be linked to programmes to raise awareness among adolescents and young adults of ways to look after their mental health and to help peers, parents and teachers know how to support their friends, children and students.

Reference:

https://www.who.int/

Highlights of the coming issue



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