SCI*TALE*

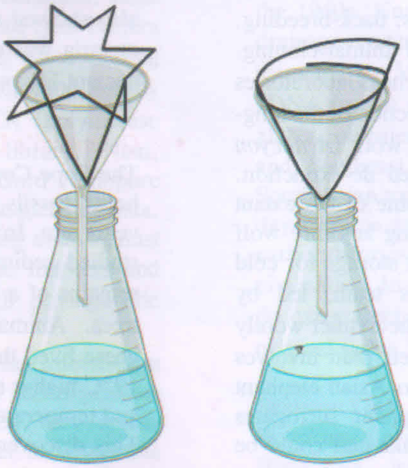
Earthworms for Science

Priya Prasannakumar

IT is the duty of scientists to prepare young minds to acquire knowledge and inspire them to fulfil their aspirations. Institutions organise an "Open Day" to let young, budding minds come for an enriching experience in their research departments.

"Inspire, Aspire, Prepare, Acquire" — this is how we can "catch them young" — the way to inculcate a scientific temper from a young age. Our research centre also decided to hold an Open Day on February 28, which is celebrated as "National Science Day" in honour of the great physicist, Sir CV Raman, and to commemorate his outstanding discovery of the Raman scattering effect. Our guide, Dr Robert Sir, asked us to arrange all our exhibits and lab instruments systematically so that we could showcase our experiments and engage students with photographs, working models, and experimental demonstrations. I kept my work on the anthelminthic effect with plant extracts ready. My research partners, Sruthi and Ameena, polished & perfected their models on "Bioplastic from Bacteria" and "Biofuel from palm fruits". We were all set to meet our young visitors.

The first stream of students was from the nearby primary school. Their teachers had innovatively given small badges to each student with name tags of scientists. One little girl was wearing her tag — "I am Rosalyn Franklin" — very proudly. Another boy with blackberry-shining eyes was looking keenly at the procedure of filtering my plant extract through filter paper. The Whatman filter paper I folded was in a fluted form and not as a cone. The boy asked me, "Why is this shaped like a flower and not like a cone?" I elucidated that a fluted filter paper offers more surface area than a normal cone, and filtration becomes faster.



Fluted and plain cone-shaped filtration assembly

The next group was a mix of high school boys and girls, and they crowded around some photographs of my work. These photos showed the anthelminthic effect of plant extracts. Earthworms could be seen in petriplates filled with different solutions. Navneet, one of the more inquisitive boys, said that he found it icky when his friends hooked worms to catch fish. I explained to the children patiently that this test was called the anthelminthic assay, which is used to find if a particular compound has a killing or expelling action against helminths.

This test used the common Indian earthworm, *Pheretima posthuma*. One child, Muhasina, pointed out that earthworms are friends of farmers. "Yes, truly", I said, they are farmers' friends as they naturally till the soil and add rich organic humus which acts as a natural fertiliser." "This anthelminthic assay," I continued, "uses adult earthworms as it bears similarity to the parasitic roundworms. There are three main types of helminth infections seen in human beings, which are caused by roundworms, tapeworms, and flukes. They cause many symptoms like abdominal pain, diarrhoea, and bloody stool. These diseases are known to stunt growth in children and have other adverse health effects. So, it is important to develop newer drugs against this neglected tropical disease".

Citing some examples, I demonstrated how a standard anthelminthic drug is mixed with normal saline and poured into Petri dishes. One control is maintained with saline, which serves as the negative control. The standard drug is the positive control, which means it will show death or paralysis of the worms. The test samples are the plant extracts whose anthelmintic effect we want to find. The negative control will not exhibit any deleterious effects on the worms. All these solutions are placed in Petri plates, and to each of these, six worms of approximately the same size are put in, and at different time intervals, paralysis & death are noted.

"How can you tell if paralysis has taken place?" asked Tamilselvi inquisitively. "I looked up at the tall, lanky high school girl & said," Paralysis occurs when the worms are not able to move even when they are taken out and placed in normal saline." "What about death, then?" asked Nitheesh, mischievously. One boy enacted death as a lifeless form with tongue out & the whole bunch of children laughed merrily. I clarified, "Death is confirmed when the worms are dipped in tepid water. They show no movement and their colour fades away?"

The children were very impressed with the photos of the worms in the different, labelled petriplates. Akash, a boy who