

The Wonder of *Kantan*: Using Torch Ginger Fibres to Produce Fine Art Papers

Elham Shafaei, Izmer Ahmad, and Adnan bin Mat of the School of the Arts, Universiti Sains Malaysia, Penang, investigate the potential of torch ginger fibres to produce hand-made fine art papers for drawing and painting.

Introduction

Torch ginger is a member of the ginger family of plants that are native to tropical areas. It grows abundantly in South and Southeast Asia, and thrives in tropical countries which have hot and humid weather, including Malaysia, and Indonesia.

Bast fibres obtained from plant matters are commonly used in the making of paper, and are an important component in the paper-making process. The bast fibres in the stem of torch ginger have been found to contain sufficient quality for making hand-made art papers. Studies show that papers made from torch ginger fibres are highly appropriate for drawing and painting mediums, including pencil, charcoal, acrylic, and ink. Torch ginger fine art papers have the capability to produce a wide range of line; offer remarkably good tonal variations; and are versatile for executing different mark-making systems and techniques. This study shows that hand-made torch ginger papers are a viable product for artists in Malaysia and elsewhere to use.

Generally, paper-making relies on bast fibres that are obtained from plants. The fibres are beaten and broken down, and mixed with water to form sheets of interlocking fibres that become paper once dried and pressed. Research undertaken by the authors indicates that the bast fibres in the stem of torch ginger contain enough elasticity, flexibility, and tensile strength for making hand-made fine art papers. Based on a series

of studio experiments and tests, the papers made from torch ginger fibres were found to be highly responsive to drawing and painting mediums such as pencil, charcoal, acrylic, gouache, and ink, and confirmed the suitability of torch ginger fibres for producing excellent hand-made papers specifically tailored for artistic use.

What is Torch Ginger?

Torch ginger (*Etilingera elatior*) is known locally in Malaysia as *Bunga Kantan* (Figures 1 and 2). A tropical plant which grows in Malaysia, Indonesia, and other tropical locations, it takes a year to bloom, and reaches the height of about 3 metres with a diameter of about 4 cm. The leaves are evergreen, and can grow up to a length of about 80 cm.

The torch ginger plant has black seeds and rhizomes for propagation, and grows quickly in rich and well-drained soil, and when watered well regularly. Its flowers are white, pink or red in colour, and the leaves grow from separate stalks along the rhizome.

Traditionally, people in Southeast Asia believe that a daily intake of raw ginger inflorescence can reduce diabetes and hypertension, and use the torch ginger plant for medicinal purposes. To relieve postpartum flatulence, women eat it together with the ginger's bitter leaves. Its root is a rich source of antioxidants, and is believed to prevent some forms of cancers. In addition, it has antibacterial properties, and is used as a decongestant and expectorant to fight respiratory problems and sinus infections. It is also useful for arthritis because of its anti-inflammatory



Figure 1: Torch ginger plant



Figure 2: Torch ginger stems

properties. Moreover, it helps reduce flatulence, intestinal cramps and gastrointestinal problems.

The young torch ginger's buds have a spicy flavour. Local inhabitants in Malaysia use it as an ingredient for some food. They chop up the stems of the flowers, and add them to curries or soups with rice noodles. The stem of torch ginger is a good source of cellulose, a characteristic that makes it useful for making hand-made paper (Foster, 2011).

Why Torch Ginger?

Torch ginger stem was chosen for this paper-making research due to its rich content of cellulose and bast fibres, all of which offer suitable thickness, length, diameter, flexibility and strength for paper-making. The process of making this paper involves some experimenting with pulp preparation in producing raw materials ideal for paper-making. This process begins with cutting, cleaning, cooking, washing, and beating the torch ginger stem, followed by the pulping process, sheet forming, pressing, and drying the paper. In some instances, sizing and finishing are done to further the potential of the fibre. Every single process has to be finely harmonized with one another in order to achieve optimal results.

Pulping

The most important step in paper-making is the pulp-making process because the type of papers to be made will be determined by the finesse of the pulps. For example, generally more textured paper is useful for watercolour, thus requiring less finesse of the pulps (Hunter, 1978; Hibert, 2000; Asuncion, 2003). For this research, the pulping process started with cleaning the torch ginger stem to get rid of dust, dirt, leaves, etc.. Then, the stems were boiled in clean fresh water for 3 hours. To further break down the fibres, soda ash was added to the water (1 spoonful for 1 litre of water).¹ The boiling process softened the stems, and removed lignin from the fibres (Figure 3). After this, the cooked stems were put

¹ Apart from soda ash, washing soda, sodium hydroxide, caustic soda, wood, and lime are among the common alkalis used by paper-makers to break the plant fibres (Hunter, 1978; Hibert, 2000; Asuncion, 2003).



Figure 3: Cooked torch ginger stems



Figure 4: Hollander beater

in a blender to macerate the fibres. Clean fresh water was also added to facilitate the blending for about 2 minutes. After blending, the fibres were washed again to further remove remaining lignin and alkaline. Finally, the fibres were beaten for 3-4 hours to produce pulps, using a machine called the Hollander beater (Figures 4 and 5).

Sheet Forming

The torch ginger pulps were turned into sheets that become paper once dried. To form the sheets, the torch ginger pulps were put in a tank of water called the vat. A mould and deckle were fitted together, submerged and pushed to the bottom of the vat. The torch ginger pulps in the vat were stirred to suspend them in water. The deckle and mould were then brought up quickly from the bottom of the vat, gently shaking it side-



Figure 5: Pulp



Figure 6: Sheet forming process

to-side to spread out the torch ginger pulps on the mould, through the screen of which water drained (Figure 6).

Couching

Next, the process of couching transferred the wet sheet from the mould onto felt, one sheet on top of the other. The felts should be soft and very absorbent, and the mould was left to tip over naturally, not too slowly or too quickly. The mould was pushed onto the felt firmly so that the paper adhered to it. At the end, a stack of wet sheets of paper – called post of papers – was left on the felt (Figure 7).

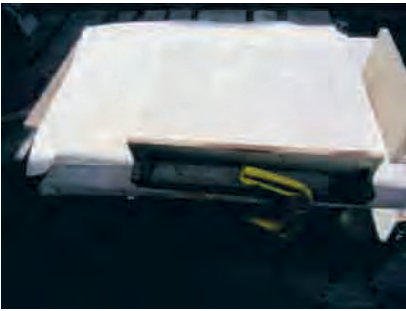


Figure 7: Couching process

Pressing

On top of the post of wet torch ginger papers, an even pressure was applied to squeeze the remaining moisture out. A piece of Plexiglas and wooden plate was put on top of the post of papers. Then, weight is applied evenly across, from the top. When the pile was properly centered on the press, papers were pressed until no water emerge from the post of paper, which was left to be pressed overnight (Figure 8).



Figure 8: Pressing process

Laying

During the pressing process, the water was squeezed out, and the sheets were transferred on to a large vertical wooden panel or hung on a rope to dry. The moist torch ginger papers should be peeled carefully from the felt. This peeling process was a delicate one, as tearing and pinch marking must be avoided. Once the sheet was completely peeled off, it was put on the wooden vertical panel to dry (Figure 9).

Drying

In this step, torch ginger papers were placed on a large vertical panel to dry. At this level, 100 grammes of metal cellulose was mixed with 2000 millimetres of water in a blender to make a solution, which helped the sheets to stick on the panel. The sheets were also evenly spread onto the panel through a roller. Finally, the papers were left to dry at room temperature for a day (Figure 10).

Sizing

Due to the hydrophilic quality of cellulose, the torch ginger paper may easily absorb moisture and lose its shape if the artist uses a wet drawing or painting media such as ink or watercolour. To avoid this problem, sizing glues² were added to the papers. Thirty grammes of alum (aluminium sulfate)³ and around 300 grammes of gelatine were soaked in 6000 millimetres of cold water until they swelled, and when heated slowly, dissolved



Figure 9: Wet sheets on vertical panel



Figure 10: Torch ginger paper



Figure 11: Soaked papers in sizing solution

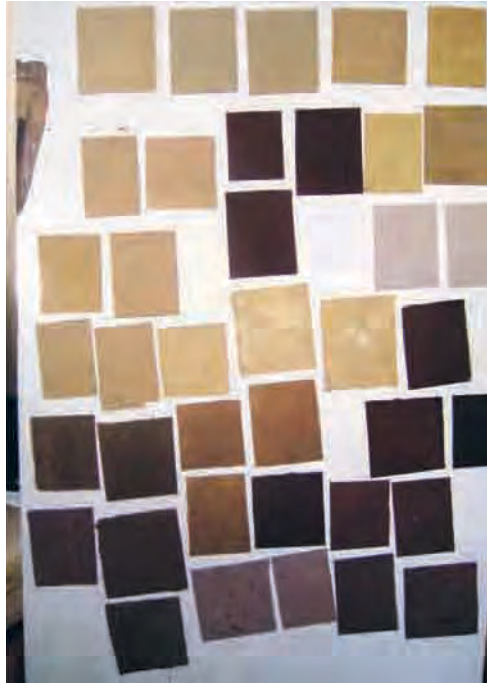


Figure 12: Sized papers on vertical panel

completely. Each sheet of *kantan* papers was immersed in the sizing solution (Figure 11). The full immersion ensures that each sheet was well covered. At the end, the sized papers were placed on the vertical panel to dry (Figure 12).

Samples of Results and Concluding Remarks

Every kind of torch ginger papers produced during this research was tested with drawing and painting mediums using different techniques (that are commonly used by some of Malaysia's well-known artists), such as pencil, charcoal, acrylic, gouache, and ink. The results indicate that papers made with torch ginger fibres are clearly suitable for drawing and

² Common materials used for sizing hand-made papers include animal glue, pure gelatine, and alum (aluminium sulphate) (Asuncion, 2003; Turner & Skiöld, 1983; Staff & Sacilotto, 1978).

³ Dry alum is salt; when it dissolves in water it becomes acidic, reducing the PH value to 3-4. To solve this problem, the alum salt is necessary for precipitating the binding substance – consisting of gelatine or animal glue – onto the fibre surface, thereby making the paper writable and water resistant (Tegethoff & Rohleder & Kroker, 2001).

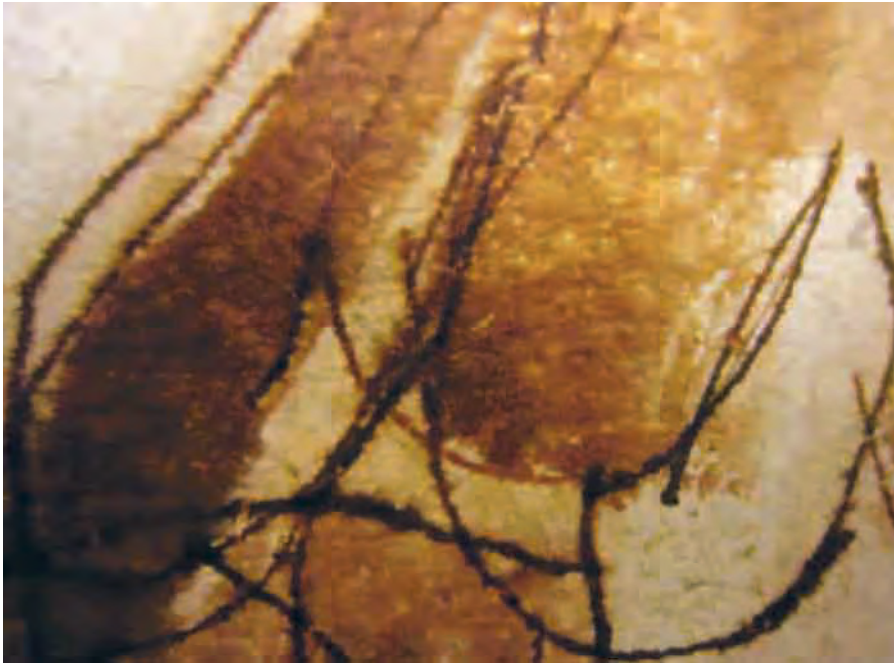


Figure 13: Ink on kantan paper

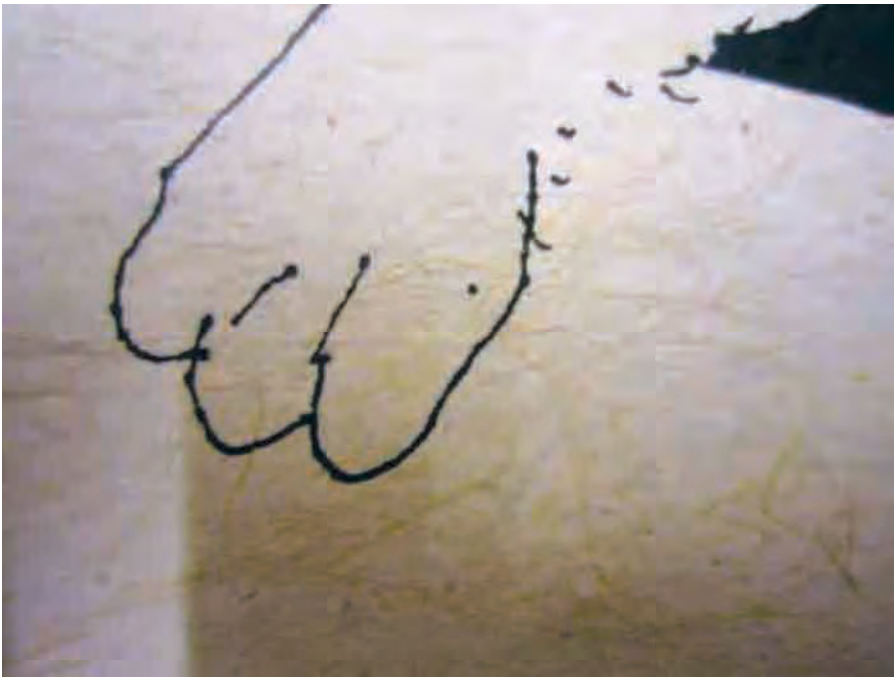


Figure 14: Pen marks on kantan paper

painting (Figures 13 and 14). The artists believe that *kantan* papers are not suitable for detail painting treatment as they are thick and rough but good for rough treatments. By coating torch ginger paper with recycle paper pulp or other suitable materials, it would be smoother. Since this paper has a good degree of absorbency, it is an appropriate paper for work with wet mediums but colour quality would be affected, because it fades easily. Gouache, acrylic, pencil, and charcoal also do well on these papers. It was found that the papers produced during this research responded positively to the mediums and techniques commonly used in drawing and painting.

This finding indicates that torch ginger fibres have an excellent potential for developing high quality fine art papers, and the commercially promising ability in providing cheaper yet higher quality alternatives to local artists and art students. It can be viable and beneficial for the artists and users, enabling them to be more self-sustaining by reducing their reliance on expensive imported art papers.

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Images courtesy of Elham Shafaei

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