

**KALAI (TINNING)****Dr. Shirish Chandrakant Bali**

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Since last 45 years my father is doing utensils business of stainless steels, copper, Brass and aluminum. Our Utensil shop is located at Shukarwar Peth, Solapur. During my school summer holidays, I use to sit at my utensils shop. Next to our shop a person sitting on a road with some charcoal, brass & copper utensils and white powder. He is heating a brass utensil and creating lot of fumes. I eagerly wanted to know what exactly he is doing and I asked my father, he said that person is doing Kalhai work. Actually, let me tell you one thing that time I couldn't understand anything about kalhai work but I observed that person making internal white surface of brass utensils.

After 10 years of working in the corrosion field now I clearly understood what is that Kalhai and why it is to be done? So, I thought my first blog should be something that what I observed and learnt which is related to my metallurgy field. The word kalai is derived from Sanskrit word Kalya Lepa. In our historical we have many metallurgical iconic examples like Delhi Iron pillar, Archeological coins. In kalai technique also the cultural Sanskrit work by Keladi Basava in "*Sivatattva Ratnakara*" (1699) written "*Kalaya-lepa*" in the chapter of cookery or "*Supashashtra*" which means applying Kalhai on utensils.

Actually, a thin tin coating and such a coating is called kalhai. Pure tin is not toxic and is not affected by air or sour substances. Therefore, the tinned surface does no trust and the pickles, curds, etc. kept in the tin pot do not rot. In addition, the pure tin is applied to brass or copper such a coating is called kalhai. Pure tin is not toxic and is not affected by air or sour substances.

Therefore, the tinned surface does not rust and the pickles, curds, etc. kept in the tin pot do not rot. In addition, the tinted page looks shiny and attractive. To make kalhai, the pot is first rubbed and the feces on it and sometimes the old kalhai is scraped off. Then the pot heats up well. This also burns the feces. After that, first put Navsagar powder on the surface of the kalhai, then rub the tin strip and spread the melted tin all over the surface.

The heat melts the tin and decomposes the ocean (separating the constituents) to form hydrochloric acid. The residue and acidity left by the acid is also removed and the surface is clean. The coating fits well on a clean surface.



When the tin is reduced to pellets without spreading, the thinness is increased by adding Navsagar powder again. In this way navsagara abhivaha (a substance used melt metal at low temperatures) is used. Immediately after applying the kalhai, the pot is dipped in cold water. So, the kalhai was shiny. This is because the tin does not shine unless the melted tin is cooled. Household utensils are usually tinned in this way. However, there are different methods of tinning when making tin-plated sheets.