Spoilage of rice and effect of some botanicals on spoilage bacteria associated with some cooked rice varieties consumed in Sri Lanka

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Rice is one of the major cereals of the world and is the staple of more than half of the world's population and for about 2.7 billion people in Asia. Rice once cooked is perishable. In the present study we investigated cooked rice spoilage of some common rice varieties in Sri Lanka (Kora, Red raw rice, white raw rice, and Samba) and compared the time taken to spoil by the different rice varieties. The study was further extended to compare the effect of clay and aluminium pots on the cooked rice spoilage and to study the potential to put off cooked rice spoilage in the traditionally used cooking substances rampe (Pandanas latifolia), curry leaves (Murraya koenigii) and turmeric (Curcuma domestica). Two species of Gram positive bacteria and two species of Gram negative bacteria could be isolated from cooked rice. Using bio chemical tests the gram positive bacteria were identified as Bacillus sp. and one of them was Bacillus cereus. In cooked rice, the total count of Gram positive bacteria increased with time while the total count of Gram negative bacteria decreased. When inoculated separately to sterilized rice, the Gram positive bacteria multiplied to a significantly greater number ($p<0.05$) than did Gram negative bacteria. This shows that Gram positive bacteria are responsible for cooked rice spoilage than Gram negative bacteria. The total bacteria number of different rice varieties was not significantly different ($p>0.05$) from each other and on average all rice types got spoiled by twenty nine and half hours after cooking. Rampe and curry leaves reduced the total Gram positive bacteria count of rice significantly ($p<0.05$) while turmeric did not ($p>0.05$). The total Gram positive bacteria count of rice cooked in aluminium pots was significantly lower ($p<0.05$) compared to rice cooked in clay pots.