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優勝作品專輯(國外作品)

作品編號	120025
參展科別	環境科學科
作品名稱	Recycled PET bottles for vacuum packaging
得獎獎項	四等獎

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# **ABSTRACT OF EXHIBIT**

## **TAIWAN INTERNATIONAL SCIENCE FAIR**

Vacuum packaging is a packaging technique intended to extend the shelf life of food via the removal of air from an enclosed package prior to sealing. This process limits the growth of aerobic bacteria or fungi due to oxygen deprivation. In this work, we present a novel do-it-yourself vacuum packaging device using the exchange of water and air between two bottles to continuously generate a vacuum-suction effect. The sizes of bottle and vacuum bag were investigated for its impact on the vacuum generation in a plastic bag containing smoked fish sausages. Large commercial 3.1-litre PET bottle generated more vacuum than the smaller ones. An equilibrated vacuum pressure of a smaller plastic bag was lower than that of a larger size. With 3.1-litre PET bottles, the vacuum pressure for 3"x5", 5"x8" and 6"x9" bags was equilibrated at 8, 10, 18 mmHg, respectively. Sausages packaged by our device last for 14 days when they were kept in -20°C refrigerator, which was comparable to those packed by the commercial vacuum packaging system for household use. This project demonstrates an application of simple science in a real life situation as well as a promotion of environmental protection idea as the electricity is not used in the vacuum generation process and the disposed plastic bottles can be reused.

## 評語

This study presents an application of hydraulic pump for vacuum packing of smoked fish sausages by using the used plastic bottles. The article is interesting and useful.