

**Absorption of Water and Electrolytes from a Liposomal  
Oral Rehydration Solution: An *in vivo* Perfusion  
Study of Rat Small Intestine**

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**Background:** Oral rehydration solution (ORS) can successfully rehydrate 90% of patients with dehydration from acute diarrhoea. However, oral rehydration therapy (ORT) with the present ORS formulation does not reduce the volume, frequency, or duration of diarrhoea. Delivering ORS in liposomes may add an additional mechanism of absorption to that already provided with glucose-mediated transport. Another practical improvement is the much-improved taste. Because the salts are incorporated into liposomes, the Aquis Liposomal-ORS tastes less salty and more acceptable to those who drink it. **Objective:** Study whether incorporation of ORS components into liposomes increases small intestinal absorption of water and electrolytes from ORS in an experimental animal model. **Methodology:** *In vivo* perfusion of the entire small intestine was performed among 73 adult rats divided into 3 groups-normal rats, rats exposed to cholera toxin (CT), and rats exposed to 5-fluorouracil (5-FU). Net movements of water and electrolytes were compared between Aquis Liposomal-ORS, Tapioka-based ORS (HS-ORS), and recent WHO-recommended hypo-osmolar ORS (S-ORS). **Results:** All the 3 ORS solutions resulted in significant absorption, but the Aquis Liposomal-ORS provided statistically significant increase of 31%, 45%, and 15% over HS-ORS in water absorption in the normal, CT-stimulated and 5-FU-treated rats respectively. Similar increases in sodium absorption were also noted with the Aquis Liposomal-ORS. There was essentially no difference in water and electrolyte absorption observed between S-ORS and HS-ORS. **Conclusion:** All the 3 ORS solutions are well-absorbed, but the Aquis Liposomal-ORS was associated with the highest level of water and electrolyte absorption. The results suggest that the liposomes are absorbed from both damaged and healthy mucosa and that the liposomes were responsible for increased absorption noted with the use of Aquis Liposomal-ORS.