カードランの製剤への応用
－カードラン錠の調製とin vitro薬物放出の評価－

菅家甫子，耕田圭子*，香田葉子，片山博和，中山明久

Drug Delivery System **7** (2)，135～140 (1992)

Preparation and in vitro drug release evaluation of curdlan tablets

Motoko Kanke, Keiko Koda*, Yoko Koda
Hirokazu Katayama, Akihisa Nakayama

ABSTRACT An application of curdlan, a natural β-1,3-glucan, to controlled drug delivery was investigated in a form of oral dosage form. Theophylline was chosen as a model drug to be incorporated with curdlan in a tablet. It was found that the drug release rate from the tablets prepared from spray-dried particles of curdlan / theophylline was constant up to 8 hr *in vitro* studies. Since theophylline release was not influenced by pH or various ions, curdlan tablets could control the drug release in physiological fluids after oral administration. Drug release was estimated to be diffusion controlled by applying the release data to Higuchi's equation. The theophylline release profile from the curdlan tablets was compared with those from 5 kinds of commercially obtained sustained release tablets in pH 1.2 medium for 2 hrs followed by in pH 6.8 medium for 6 hrs at 37℃. In addition to theophylline, release profiles of acetaminophen, propranolol hydrochloride and salbutamol sulfate were also obtained from their curdlan tablets. Although the release rates were influenced by their solubilities, each drug release was sustained greatly compared with corresponding drug powder.

Adjustment of drug content in the tablets and of tablet surface area allows formulation of the desired preparation.

抄録 薬物含有カードラン錠は，各種溶出液中で表面よりゲル化するが崩壊せず，薬物放出はHiguchi式によく一致した。これより，カードランマトリックス中の薬物

拡散が，錠剤からの薬物放出の律速段階になっていると推察された。

カードラン錠からのテオフィリン放出は，溶出液のpHやイオン組成の影響を受けず，消化管内での薬物放出が一定である可能性が示唆された。また，テオフィリン放出は，錠剤の薬物放出面積と薬物含量を変えることによって調節可能であった。この二つの因子をうまく組み合わせることによって，望む薬物放出パターンを得ることが可能であろう。

以上より，カードランの薬物放出制御製剤への応用が期待できる。

* Department of Pharmay, Aichi Medical University Hospital
愛知医科大学附属病院薬剤部