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Pharmaceutical Sciences Seminar

Wednesday, March 31, 2021
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4:00-5:00 pm

"Influence of anti-TNFα mAb products' structure-activity relationships on IBD prescription tendencies and market capture"

Presented by:

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Abstract: Many of the top-selling drug products on the market, with sales nearing tens of billions annually, are monoclonal antibodies (mAbs). This lucrative class of drug products has seen great success in the last 30+ years in a number of disease states including autoimmune diseases and cancers. Due to the success of innovator mAb products, it is unsurprising that the overall biologics market is saturated with competition. Competition can come in the form of other innovator products approved for the same indications, or, as products lose their exclusivity, in the form of biosimilars. This is the case for the autoimmune disease market (rheumatoid arthritis, psoriasis, irritable bowel disease, etc.) where there are a multitude of innovators and biosimilars FDA approved. However, not all approved products are prescribed at the same rate or capture the same size of the market. For anti-TNFα mAbs, namely the innovator products Humira® (adalimumab), Remicade® (infliximab) and Simponi® (golimumab), there is variability in prescribing tendencies, and thus market capture, as is exemplified in the irritable bowel disease (IBD) market. To further understand whether these discrepancies arise due to inherent differences in mAb efficacy, we have compared the three aforementioned products with regards to their structure-activity relationship. During our comparison we have studied both the primary mechanism of action – TNFa binding - secondary mechanism of action proposed for IBD patients – Fc effector function – and other structure related characteristics - glycosylation patterns. From our data we have determined that prescription tendencies and market capture cannot be solely described or predicted by the structure-activity relationship of the three anti-TNFα products.

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