Allergic Rhinitis and air pollution: New clinical evidence with fexofenadine hydrochloride 180 mg

Main allergic rhinitis symptoms
- Rhinorrhoea
- Sneezing
- Nasal obstruction
- Nasal itching
- Ocular itching
- Watery eyes
- Throat itching

Diesel exhaust particles (DEP) aggravate allergen-induced allergic response
- AR is a type I hypersensitivity reaction to airborne allergens, such as pollen (or house dust mites)
- Exposure to air pollutants and climate change has been linked to AR symptom exacerbation
- DEP, an air pollutant, when combined with airborne allergen is able to enhance allergen-induced degranulation, leading to worsening AR symptoms

FEXPOLSAR was a phase III, single-centre, sequential, parallel-group, double-blind, randomized study conducted in an environmental exposure unit

Inclusion criteria:
- 2-year history of seasonal allergic rhinitis (SAR) with positive skin prick test to ragweed
- Self-reported history of SAR symptoms aggravated by pollen or air pollutants exposure
- Total Nasal Symptom Score (TNSS) ≥3 in Period 1 (V2)

Primary endpoints
Participants graded their Total Nasal Symptom Score (TNSS) on a 0–3-point scale over 12-hours from baseline for each Period. TNSS was calculated as the sum of rhinorrhoea, sneezing, and nasal itching scores.

First primary objective: to demonstrate the aggravation of the SAR symptoms caused by DEP exposure

Change in TNSS AUC from baseline to hour 12 (TNSS AUC₀₋₁₂)

Second primary objective: to evaluate the efficacy of fexofenadine HCl in alleviating symptoms aggravated by DEP presence

Change in TNSS AUC from hour 2 to 12 (TNSS AUC₂₋₁₂)

TNSS AUC₀₋₁₂ in Period 1 and 2
A significant increase in SAR symptoms from Period 1 to Period 2 was observed

TNSS AUC₂₋₁₂ in Period 3
A significant decrease in DEP-aggravated, SAR symptoms was observed with fexofenadine HCl compared with placebo

The proportion of subjects reporting treatment-emergent adverse events was higher in the placebo group

15.1% Placebo group
12.6% Fexofenadine HCl group

DEP, a common constituent of air pollution, significantly aggravates pollen induced allergic rhinitis symptoms
- Fexofenadine HCl 180 mg significantly improves pollutant-aggravated pollen induced SAR symptoms vs placebo